

R. INDEX NUMBER 30 7 8

the

Journal

*of the association for physical
and mental rehabilitation*



NOVEMBER-DECEMBER, 1957

VOL. 11, NO. 6

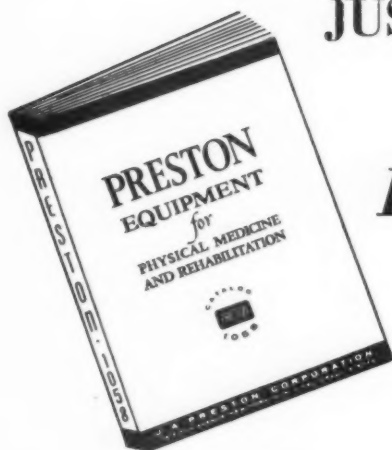
PRESTON

A Complete Line

FOR PHYSICAL MEDICINE REHABILITATION

JUST PUBLISHED—

THE ALL NEW PRESTON CATALOG No. 1058



EQUIPMENT FOR REHABILITATION

- THE MOST COMPLETE CATALOG IN THE FIELD . . . now larger than ever before . . . describing and illustrating over 1500 items.
- A VALUABLE MANUAL of all types of equipment used in Rehabilitation, containing more than 200 new items — never previously catalogued—and, as with all articles listed, thoroughly investigated for usefulness and quality up to the Preston standard.
- YOUR ONE COMPREHENSIVE GUIDE in the selection of ALL your requirements — whether for a single item or a complete installation. Preston friends across the nation and in all parts of the world look to our catalog as their one convenient ordering source for all Physical Medicine & Rehabilitation Equipment.

On this occasion of publishing the 5th edition of the Preston Catalog, we want to thank you, our customers and friends, for your past patronage and for your confidence in our service. We will endeavor to continue offering highest quality equipment at moderate prices, and prompt shipment of all your orders . . . made possible by serving you directly from our headquarters and fully stocked warehouse.

- If you have not yet received your free copy of the completely illustrated Preston Catalog, No. 1058, we will be glad to send you one — just drop us a line.

**ALL your needs supplied
by ONE reliable source**

J. A. PRESTON CORP.
175 FIFTH AVENUE, NEW YORK 10, N. Y.

NEW FRANKLIN TILT BED

Model M-300

"GETS THEM ON THEIR FEET EARLY"

USES OF FRANKLIN TILT BED

Cardiac conditions	(d) Polio
Rheumatic fever	(e) Muscular dystrophy
Tuberculosis and chest conditions	(f) Multiple sclerosis
Orthopedic and arthritic	(g) Cerebral palsy (relaxation)
Neurological disorders	General medical and surgical conditions
(a) Paraplegics	(a) Post surgery
(b) Quadriplegics	(b) Diabetics
(c) Hemiplegics	(c) Geriatrics (aged)

Designed to give ease and comfort and provide treatment for patients too weak or ill to be transferred to a Tilt-Table for therapy treatment, the new Franklin Tilt-Bed provides for all of the standard hospital bed positions and adjustments, as well as the important features of tilt-tables. It is excellent for prescribed treatment to aid in weight bearing and prevention of related complications caused by prolonged periods of the body lying in a prone position and for cardiac treatment.

The New Franklin Bed Conforms

to Standard Hospital Bed Sizes

No greater floor space area is required for operation of the Franklin Tilt-Bed. It moves through all degrees of the tilting position without any movement from its location.

Motorized tilting mechanism is controlled by a remote control switch operated from any position near the bed. Any position between horizontal and 90 degrees can be attained by gradual adjustment. Operator is free to help the patient or to make adjustments in the spring position.

SPECIFICATIONS

Bed illustrated is Model M-300	Casters, 5" locking type, ball-bearing
Spring type, two-crank, side-adjusting Gatch Spring	Bed frame, tilts from 0 degrees to 90 degrees by motor operated mechanism (-10° available through spring adjustment)
Bed Height, standard or low model on request	Motor, ½ H.P., 110 V, 60 cycle, (single-phase, explosion-proof motor supplied on request)
Spring Frame, 35" x 80"	Control switch, remote operating type
Mattress size, 3/0 x 6/8 (Mattress not included—Standard mattress suitable)	

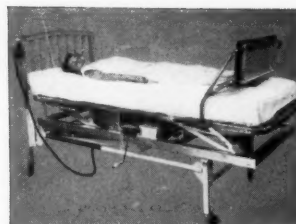
Write for literature on this or other Franklin Products

Tilt Table • Mobile Arm Sling Suspension • Finger Exerciser

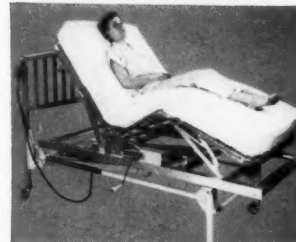
FRANKLIN HOSPITAL EQUIPMENT CO.

Designers and manufacturers of Hospital Equipment

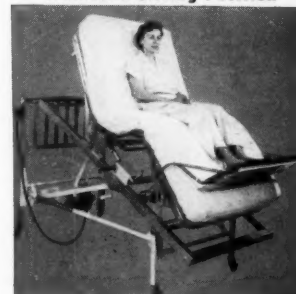
116 Academy Street PHONE: Market 2-5187 Newark 2, N. J.



Horizontal Position (0°)



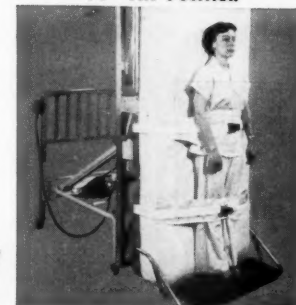
Standard Sitting Position



Cardiac Position



70° Tilt Position



Full Standing Position (90°)



Choose the right cane or crutch for every case — every need from Rehabilitation Products

Pictured above are only a few of more than 2,000 products in your Rehabilitation Products Catalog—each one tested and each guaranteed. Whatever your equipment needs, be sure to check **your one complete source** first—your Rehabilitation Products Catalog. If you don't have a copy, write today. All items listed are available for prompt shipment. Rehabilitation Products has representatives and offices located throughout the United States to provide unexcelled, on-the-spot service as you need it.

For quantity prices on the items below, consult your RP Representative.

7845	—Aluminum Canadian Crutches	\$18.00 pr.
7877	—Adjustable Aluminum Cane. Doz.	5.75 ea.
7841	—Steel Canadian Crutches	10.00 pr.
7882	—Aluminum Cane. Dozen	2.70 ea.
7883	—Tarmac Ankle-Action Tripod Cane. Dozen	9.00 ea.
7883A	—Tarmac Adjustable Ankle-Action Tripod Cane. Dozen	12.40 ea.
7884	—Tarmac Ankle-Action Tripod Cane Base. Dozen	6.75 ea.
7856	—Adjustable Aluminum Crutch	9.95 pr.
30355	—Hardwood Cane. Dozen	1.28 ea.
30366	—Tarmac Adjustable Crutch. Dozen pairs (Child—Adjusts from 29" to 40")	2.70 pr.
30364	—Tarmac Adjustable Crutch. Dozen pairs (Adult—Adjusts from 46" to 60")	2.70 pr.
30360	—Tarmac Standard Crutches. Dozen pairs (Even sizes—32" to 60")	2.08 pr.
30395	—Safe-T-Grip Crutch Tip—For size 18 & 19 Crutch. Measures 1 1/4" high x 1 1/2" diam at base	.50 pr.
6198	—Child Size Keystone Splint (With Case)	29.50 ea.



Rehabilitation Products

Division of American Hospital Supply Corporation

General Offices: Evanston, Illinois New York • Chicago • Kansas City • Dallas
Minneapolis • Atlanta • Washington • Los Angeles • San Francisco • Columbus

The Journal of the Association for
Physical and Mental Rehabilitation
NOVEMBER—DECEMBER, 1957

VOLUME 11

Number 6

Published Bimonthly
by the Association for
Physical and Mental Rehabilitation
1472 Broadway
New York 35, N. Y.
Tel. BRyant 9-9642

in
this
issue

EDITORIAL BOARD

John E. Davis, Sc.D. Rehoboth Beach, Del.
Edward D. Greenwood, M.D. Topeka, Kans.
Richard L. Jenkins, M.D. Washington, D. C.
Lewis A. Leavitt, M.D. Houston, Texas
Jack Meislin, M.D. Montrose, N. Y.
Arpad Pauncz, M.D. Downey, Ill.
Carl Haven Young, Ed.D. Los Angeles, Calif.

EDITORIAL STAFF

EDITOR

Roger H. Wessel
Box 478, Montrose, N. Y.

EDITOR EMERITUS

Everett M. Sanders
So. Sudbury, Mass.

ASSOCIATE EDITORS

Marthann Doolittle
Thomas J. Fleming
J. Robert Macaluso

CONTRIBUTING EDITORS

Thomas K. Cureton, Ph.D., Urbana, Ill.
Ernst Jakl, M.D., Lexington, Ky.
Peter V. Karpovich, M.D., Springfield, Mass.
C. H. McCloy, Ph.D., Iowa City, Iowa
Dana M. Street, M.D., Memphis, Tenn.
Raymond A. Weiss, Ph.D., New York, N. Y.

DEPARTMENT EDITORS

BOOK REVIEWS AND ABSTRACTS

Philip J. Rasch, Ph.D.

CHAPTERS

Frank S. Deyoe

PRODUCTION EDITOR

Harold McCormick

CIRCULATION MANAGERS

Edward Mecchella William Kultzow

ADVERTISING MANAGER

John J. Marquette
66 Stone Ave., Ossining, N. Y.

SUBSCRIPTION RATES

Subscription to the Journal is included in Active,
Professional, and Associate memberships.

Subscriptions to libraries and organizations \$5.00

Foreign \$5.50

Single Copies \$1.00

Address all requests for subscriptions to:
Edward F. Mecchella, Circulation Manager,
Box 478, Montrose, N. Y.

Copyright 1957 by the Association for
Physical and Mental Rehabilitation

ARTICLES

- Home Exercises for Convalescing Cardiac Pa-
tients, Part I, — C. H. McCoy, Ph.D. 181
- The Nature of Cardiovascular Condition in
Normal Humans, Part I, — Thomas K.
Cureton, Ph.D., F.A.P.H.A. 186
- Trends in Rehabilitation Centers — George V.
Devins, B.A., C.C.T. 197
- Adapting the American Red Cross Swimming
Courses for Use in An NP Corrective
Therapy Program — Richard L. Comstock,
C.C.T. and Louis J. Fishbune, C.M.R.C.,
C.C.T. 201

DEPARTMENTS

- FROM OTHER JOURNALS 202
- EDITORIALS 203
- BOOK REVIEWS 204
- AWARDS 205
- CHAPTERS 206
- SUBJECT — AUTHOR INDEX 207
- CLASSIFIED DIRECTORY Back Cover

THE JOURNAL OF THE ASSOCIATION FOR PHYSICAL AND MENTAL REHABILITATION

Information For Contributors

MANUSCRIPT: Manuscripts should not exceed ten (10) typewritten pages; approximately 5,000 words. Manuscripts must be the original copy, not a carbon, typed double-spaced with margins of one (1) inch for large type and one and a half (1½) inches for the small.

STYLE: Prepare manuscripts in conformity with the general style of the Journal. Retain a copy of the manuscript and duplicates of all tables, figures, charts for future use should originals be lost in the mails.

ILLUSTRATIONS: Drawings and charts should be made with India ink for photographic reproduction as zinc etchings. Photographs must be 8 x 10 inches, high contrast, black and white, glossy prints. Printed captions and related information referring to photographs, must be typed and attached to the bottom of the photograph. In accepting an article for publication the association agrees to defray the costs of one (1) photo engraving or line cut used for illustration purposes. Cost of additional engravings will be charged to the author.

REFERENCES: References in the text, should be in the form of footnotes, numbered consecutively throughout the manuscript. Additional references for collateral reading should be assembled alphabetically by author at the end of the article. This requires, in order, name of author, title of article, name of periodical or book, volume, page, month and year. For example: Dudley J. Morton, *The Human Foot*, Columbia University Press, 1953; Norman Q. Brill, "The Patient and His Motivation," *Journal of the Association for Physical and Mental Rehabilitation* 11:1:5, Jan. 1957.

Send all manuscripts to the Editor, Box 478, Montrose, N. Y.

REPRINTS: Should be ordered when manuscript is submitted. They may be purchased at the following prices:

No. Pages	100	200	300	400	500	1000	100 Add.
1	\$ 6.50	\$ 7.75	\$ 8.75	\$ 9.75	\$10.75	\$15.00	\$.75
2	9.25	10.50	11.75	13.00	14.25	19.75	1.00
3 - 4	11.75	13.50	15.25	17.00	18.50	26.00	1.50
5 - 8	22.50	25.75	29.00	32.25	35.50	48.75	3.00
9 - 10	25.50	30.50	35.50	40.50	45.50	65.00	4.00

REPRESENTATIVE ASSEMBLY

Area I

Leo Berner, 218-02 67th Ave., Bayside, N.Y.
Kenneth Dening, 226 Wyman Rd., North Abington, Mass.
George Heos, Box 256, Astor Station, Boston 23, Mass.

Area II

Chris Kopf 2015 Birch St., Scotch Plains, N.J.
Michael Yarosh, VAH, Wilkes-Barre, Pa.
Thomas Zwierlein, 43 Shelter Lane, Levittown, Pa.

Area III

Charles Ishmael, VAH, Coral Gables, Fla.
Robert McIntyre, VAH, Salisbury, N.C.

Area IV

Roland Gagnon, 211 W. Humiston, Pontiac, Ill.
Leslie Root, 2142 N. 61st St., Wauwatosa 13, Wisc.
Robert Shelton, Univ. of Illinois, Urbana, Ill.

Area V

Edgar Gay, VAH, Topeka, Kansas.
M. Raymond Robinson, VAH, Jefferson Barracks, Mo.
Ernest A. Wilbur, 4738 Miles Drive, New Orleans 22, La.

Area VI

Evangelio Gerontinos, 1781 Begen Ave., Mountain View, Calif.
David Portillo, VAH, Brentwood, Calif.
Burr Zachary, 2527 Washington Ave., Santa Monica, Calif.

Speaker of the House—Chris Kopf
Secretary—M. Raymond Robinson

OFFICERS

JOHN E. DAVIS, Sc.D.	PRESIDENT
105 St. Lawrence St., Rehoboth Beach, Delaware	
WILLIS P. DENNY	PRESIDENT-ELECT
P. O. Box 352, Dublin, Georgia	
ELEANOR B. STONE	VICE-PRESIDENT
2451 Webb Ave., University Hqts 68, N. Y.	
CHARLES E. CASTLE	VICE-PRESIDENT
Rte 5, Clinton Rd., Chillicothe, Ohio	
PHILIP J. RASCH, Ph.D.	VICE-PRESIDENT
567 Erskine Drive, Pacific Palisades, Calif.	
LESTER P. BURROWES	SECRETARY
Box 12, Clinton, Miss.	
RAYMOND B. HEASLET	TREASURER
74 The Downs, Tuscaloosa, Ala.	
ROGER H. WESSEL	DIRECTOR OF PUBLICATIONS
Box 478, Montrose, N. Y.	
ARTHUR LANDY	PAST PRESIDENT
6923 McPherson Blvd., Pittsburgh 8, Pa.	

ADVISORY BOARD

ARTHUR LANDY, Secretary

JOHN H. ALDES, M.D.	Los Angeles, Calif.
RUFUS ALLDREDGE, M.D.	New Orleans, La.
THOMAS K. CURETON, Ph.D.	Urbana, Ill.
TEMPLE FAY, M.D.	Philadelphia, Pa.
EVERILL FOWLKS, M.D.	Portland, Ore.
RICHARD V. FREEMAN, M.D.	Los Angeles, Calif.
FRITZ FRIEDLAND, M.D.	Boston, Mass.
EDWARD GREENWOOD, M.D.	Topeka, Kans.
HAROLD M. HILDRETH, Ph.D.	Arlington, Va.
A. B. C. KNUDSON, M.D.	Washington, D. C.
MELVIN J. MAAS, Maj. Gen. USMCR Ret.	Washington, D. C.
C. H. McCLOY, Ph.D.	Iowa City, Ia.
ROSS T. McINTYRE, M.D.	Coronado, Calif.
KARL MENNINGER, M.D.	Topeka, Kans.
DONALD MUNRO, M.D.	Boston, Mass.
LOUIS B. NEWMAN, M.D.	Chicago, Ill.
WINTHROP M. PHELPS, M.D.	Baltimore, Md.
JOSEPHINE L. RATHBONE, Ph.D.	New York, N. Y.
ARTHUR STEINDLER, M.D.	Iowa City, Iowa
HARVEY J. TOMPKINS, M.D.	New York, N. Y.
JOSEPH H. VAN SCHOICK	Washington, D. C.
STAFFORD L. WARREN	Los Angeles, Calif.

COMMITTEES AND CHAIRMEN

STANDING COMMITTEES: AWARDS: George V. Devins; CERTIFICATION: Thomas J. Fleming; CHAPTERS: Frank S. Deyce; CONFERENCE: Louis F. Mantovano, Leo Berner, Thomas J. Fleming; CONSTITUTION: Arthur Landy; EDUCATION: Karl K. Klein, Carl H. Young, Ph.D.; MEMBERSHIP: Eleanor B. Stone; NOMINATION: Chris Kopf; PROFESSIONAL STANDARDS: Ernest A. Wilbur, Ph.D.; PUBLIC RELATIONS: Jack E. Watson.

ADMINISTRATIVE COMMITTEES: ADVERTISING: John J. Marquette; BROCHURE: Harlan C. Wood; EMBLEMS: Robert E. Hodgdon; EXHIBITS: Fred A. O'Banion; HISTORIAN: Philip J. Rasch, Ph.D.; LEGISLATIVE: Leslie M. Root; LIAISON: Charles E. Castle; POSITION STANDARDS: Zane E. Grimm; RECRUITMENT AND PLACEMENT: Robert L. Davis; RESEARCH: Paul Roland; SCHOLARSHIP: David Ser; SURVEY: Burr S. Zachary.

HOME EXERCISES FOR CONVALESCING CARDIAC PATIENTS

BEGINNING AND INTERMEDIATE EXERCISES (PART I)

C. H. McCLOY, Ph.D.*

INTRODUCTION

Progressive cardiologists are increasingly prescribing exercise reconditioning programs for patients who have made significant progress in recuperating from cardiac accidents. The general trend of the advice given is frequently to tell the patient to begin to take walks, first walking slowly (approximately two to two-and-a-half miles per hour), and walking only a short distance (usually at the beginning, about a quarter of a mile), and gradually to increase the distance up to about a mile twice a day; and then gradually to increase the pace, eventually from about 2½ miles per hour to about 3½ miles per hour. After that, the patient is told that, if he suffers no angina or other untoward effects, he may increase the distance gradually to about two miles a day. *All too frequently, this is the only advice given relative to exercise.*

There are two difficulties with such advice. First, it is not appropriate in cold weather. Few cardiologists would care to advise a patient to walk in this manner when the temperature is very far below 40° F. Breathing the cold air can cause anginal complications. Hence, *if this is the sole exercise program*, the patient exercises little during the cold weather and usually gets out of condition during the winter. The second difficulty is that walking, while a fairly effective exercise for stimulating the heart muscles to develop, is very inferior exercise for general muscular development, and the patient is apt to remain muscularly soft, and muscularly below par for reconditioning for resuming his normal job.

Two things can be done to meet these objections. In 1943 when the writer was working in the Reconditioning Consultant Division of the Office of the Surgeon General of the Army, one of his major assignments was to prepare the exercise formulary for physical reconditioning, later known as TM 8-292, *Physical Reconditioning* (and eventually divided into two manuals, TM 8-292, *Physical Reconditioning*, and TM 8-294, *Advanced Physical Reconditioning*). In the preparation of these manuals, everything prepared was first cleared with the appropriate medical officers in the Office of the Surgeon General. For example, exercises for cardiac patients were first cleared with the cardiologists in the Office of the Surgeon General and later with cardiologists at Walter Reed

Hospital. Corrective exercise programs were cleared with the Chief of Orthopedics at the Office of the Surgeon General, etc. Everything prepared was then tried out in different army hospitals.

Two exercise programs, both of a calisthenic nature, were prepared for cardiacs by Dr. George T. Stafford of the University of Illinois (then working with the Army School for Enlisted Reconditioning Personnel) and the present writer. The first program was conducted entirely while the patient was reclining so that the weight of the body would not be added to each exercise thus reducing the amount of general exercise dosage. When the cardiologist approved, the patients were moved to an intermediate program, where many of the exercises were engaged in while standing. This program was considerably more strenuous than the beginning program. These programs were then experimented with under the eye of the cardiologist at England General Hospital in Atlantic City, were modified and later standardized. The point is, they were found to be satisfactory, and resulted from adequate experimentation with cardiac patients (these patients were largely post-rheumatic fever patients).

These programs can be used by recuperating cardiac patients *at home*, in any kind of weather. The intelligent patient can provide a self-check by counting his 15 second pulse rate after each exercise, and, where indicated, he can rest for some time between exercises. Much more of the body's musculature is stimulated to development by such a program than is true of a walking program. In good weather, it is recommended that the subject "work out" by a walk once a day, and work out once by using the home calisthenics exercise program. One workout should be done in the morning and one in the afternoon.

The two exercise routines are given below.

The *beginning exercise routine* for convalescent cardiac patients is, of course, to be begun only when indicated by the physician in charge. In no case is the patient to close his glottis and "bear down." He should continue to breathe easily and regularly, thus avoiding any significant increase in either intrathoracic or intra-abdominal pressures.

The dosages of each of these routines should begin with about four movements for each exercise (complete movements), and gradually increase the number from week to week as it is found that the patient can increase the numbers of executions of

*State University of Iowa.

each exercise without any angular discomfort. In other words, he continues to increase his work load as long as his tolerance is within limits of complete comfort.

**BEGINNING CONDITIONING EXERCISES FOR
CARDIAC PATIENTS**

(All exercises for this group will be done on the bed or mat.)

1. Exhale and Contract Abdomen

Cadence: slow.

Starting position: on back, knees partially drawn up, arms by side.

Movement:

- (1) Exhale slowly and fully and draw the abdomen inward as far as possible.
- (2) Recover to starting position.
- (3) Inhale slowly raising chest as high as possible, pressing downward slightly with the arms against the mat.
- (4) Recover to starting position.

Four to six executions.

2. Arms Forward to Sideward

Cadence: moderate to slow.

Starting position: on back, arms forward.

Movement:

- (1) Move arms sideward to side shoulder level position, at the same time inhale deeply.
- (2) Recover to original position and exhale deeply.
- (3) Repeat count (1).
- (4) Repeat count (2).

Four to six executions.

3. Hip Swinger

Cadence: moderate.

Starting position: on back, fingers laced behind head, feet about 1 foot apart and drawn up near hips.

Movement:

- (1) Lift hips clear of bed and swing them as far as possible to the left.
- (2) Lift hips again and swing them as far as possible to the right.
- (3) Repeat count (1).
- (4) Repeat count (2).

Four to six executions.

4. Cat Stretch

Cadence: moderate.

Starting position: on back, palms on mat.

Movement:

- (1) Stretch the legs, tightening muscles on both sides of the leg (quadriceps and hamstrings), and stretch toes downward hard. Learn to make muscles hard like trying to "make a muscle" on upper arm. Inhale with this count.

(2) Relax the leg muscles generally but raise the toes upward hard, and exhale.

(3) Repeat count (1).

(4) Repeat count (2).

Four to six executions.

5. Knee puller

Cadence: moderate to slow.

Starting position: on back, at attention.

Movement:

(1) Raise left knee up towards the chest, grasping the leg below the knee with both hands and pulling knee hard up to chest. At the same time exhale deeply.

(2) Recover to starting position and inhale.

(3) Repeat count (1) with opposite leg.

(4) Recover to starting position and inhale.

From six to ten executions.

6. Flap Wings

Cadence: moderate to fast.

Starting position: on back, at attention.

Movement:

(1) With arms down, extend wrists as far and as hard as possible.

(2) Flex wrists as far as possible.

(3) Repeat count (1).

(4) Repeat count (2).

Same, arms forward, and arms sideward, four to six times in each position.

7. Sit-up

Cadence: slow.

Starting position: on back, hands on thighs, feet under covers, if in bed.

Movement:

(1) Sit up, moving forward until fingers can touch lower leg between knees and feet, and exhale.

(2) Recover to starting position, and inhale.

(3) Repeat count (1).

(4) Repeat count (2).

Six to eight four-count executions.

8. Breaking Chains

Cadence: slow.

Starting position: on back, elbows raised sideward, slightly off the mat, fists clenched in front of shoulders.

Movement:

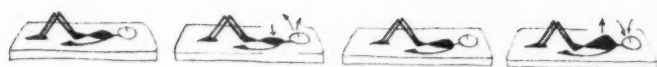
(1) Pull elbows back hard as if trying to break a chain held in the two hands. Press elbows hard against the bed, then relax.

(2) Pull again, then relax.

(3) Repeat count (2).

(4) Recover to starting position.

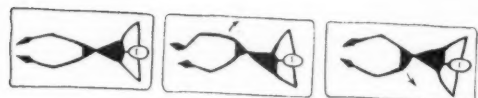
Four to six executions.



1



2



3



4



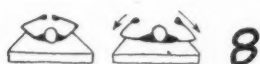
5



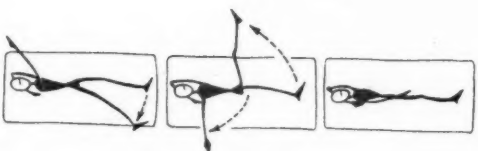
6



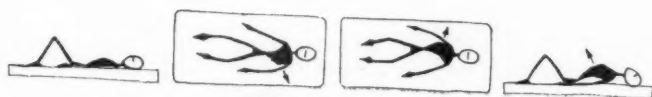
7



8



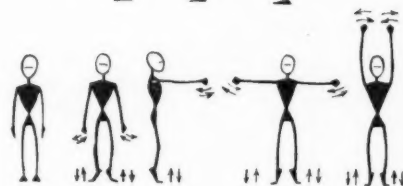
9



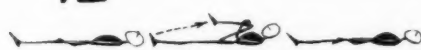
10



11



12



13



14



15



16



17



18



19



20

9. *Swing and Kick*

Cadence: moderate to slow.

Starting position: lying on the left side with left side of head resting upon left forearm.

Movement:

(1) Swing right leg straight forward along the mat and at the same time swing right arm directly to the rear. Exhale with this movement.

(2) Swing right leg downward and backward behind left leg, and swing arm forward and up above head in line with body. Inhale with this movement.

(3) Repeat count (1).

(4) Repeat count (2).

Do three to four executions lying on left side, then turn over and repeat on opposite side.

10. *Rib Stretcher*

Cadence: slow.

Starting position: on back, knees fully bent, hands about 1 foot from side of the body.

Movement: (Do each movement three to six times before proceeding to the next. This is not a four-count exercise.)

(1) Lift chest and stretch to left as far as possible, then return to position.

(2) Repeat movement (1) to right.

(3) Arch back and raise chest as high as possible.

(4) Combine the first three movements. Do first execution left, upward, right; do second execution right, upward, left; continue reversing the direction for each execution.

Progression in the drill for beginning cardiac patients should be about one repetition each day up to the time when the individual can take approximately 20 minutes of exercise. As the patient progresses in strength there should be fewer rests between each exercise movement and between each different exercise.

INTERMEDIATE CONDITIONING EXERCISES FOR CARDIAC PATIENTS

The *intermediate exercise program* for convalescing cardiac patients, to be begun when approved by the physician, is somewhat more strenuous than the first one given above. Again the beginner can start with about four executions of each exercise, and work up as he finds that his tolerance becomes adequate. In every case the progress should be relatively slow. In no case should the increase be more than one execution per day in each exercise, and if the slightest chest discomfort is experienced, he should probably go back one or two executions from that currently used.

11. *Breathe and Contract*

Cadence: slow.

Starting position: standing, hands on abdomen.

Movement:

(1-2-3-4) Exhale in four counts, drawing out more each time.

(5-6-7-8) Inhale on four counts, attempting to inhale more on each count.

Repeat 10 times.

12. *Grip and Stretch*

Cadence: moderate to fast.

Starting position: attention.

Movement:

(1) With arms downward, clench fists tightly and rise high on toes.

(2) While extending fingers, lower heels to the floor.

(3) Repeat count (1).

(4) Recover to starting position.

Same, arms forward, arms sideward, and arms upward. Four to six executions in each position. Cadence is counted in each position.

13. *Knee Puller*

Cadence: moderate to slow.

Starting position: on back, at attention.

Movement:

(1) Raise left knee up towards the chest, grasping the leg below the knee with both hands and pulling knee hard up to chest, at the same time exhaling deeply.

(2) Recover to starting position and inhale.

(3) Repeat count (1) with opposite leg.

(4) Recover to starting position and inhale. From 10 to 15 executions.

14. *Neck Firm*

Cadence: moderate to slow.

Starting position: erect, fingers laced behind head.

Movement:

(1) Raise chest high, pulling head backward against resistance of hands, keeping elbows back, bending upper back backward slightly, inhaling.

(2) Recover to starting position and exhale.

(3) Repeat count (1).

(4) Repeat count (2).

From 10 to 15 executions.

15. *Curl and Twist*

Cadence: moderate.

Starting position: on back, arms by side, feet separated about 2 feet.

Movement:

(1) Raise head and shoulders only from the bed, raising right shoulder the higher. Touch left knee with right hand. At the same time, raise left leg off bed about 6 inches.

(2) Recover to starting position.

(3) Repeat count (1) to other side.

(4) Recover to starting position.

From six to ten executions.

16. *Knee Bend and Curl*

Cadence: slow.

Starting position: attention.

Movement:

(1) Bend knees to full knee bend position and at the same time flex forearms forward. Hands are just in front of shoulders. Exhale on downward movement.

(2) Recover to starting position and exhale.

(3) Repeat count (1).

(4) Repeat count (2).

From six to ten executions.

17. *Prone Leg Raising*

Cadence: slow.

Starting position: prone, head supported on hands, and forearms flexed.

Movement:

(1) Raise left leg backward with knee straight.

(2) Recover to starting position.

(3) Raise right leg backward.

(4) Recover to starting position.

From eight to ten executions.

18. *Turn and Bend*

Cadence: moderate.

Starting position: side-straddle, arms sideward.

Movement:

(1) Turn trunk to left, lowering both hands to ground beside left foot, and exhale.

(2) Recover to original position, and inhale.

(3) Repeat count (1) to opposite side.

(4) Repeat count (2).

Three to four executions on each side.

19. *Stair Climber*

Cadence: moderate to fast.

Starting position: attention.

Movement:

for about 30 seconds. By the end of the third week the patient should be able to do a slow jog of not more than 1 minute. The patient will do well to inhale on two steps and exhale on two steps.

For the first few days, patient does stationary walk only. He later works into a slow stationary jog and by the end of the first week he will be jogging

20. *Air Push*

Cadence: very slow.

Starting position: feet apart, knees slightly bent, arms forward and palms up as though holding a heavy weight on the hands.

Movement:

(1) Extending knees, go through the motion of pushing a heavy weight above the head. Inhale at the same time.

(2) Reverse position of palms and do an imaginary pull-down, finishing with legs bent and fists clenched in front of chest.

(3) Repeat count (1).

(4) Repeat count (2).

From six to ten executions.

After patients can work up in this intermediate program to the place where they are doing at least 12 executions of each exercise, and without more than about 1/2 minute between exercises, a more strenuous program, designed for normal people, can be undertaken. This will not be outlined here but can be found in the Army manual TM 8-292, beginning with page 118.

(To be concluded next issue)

MANOMETER AIDS CARDIOVASCULAR RESEARCH

A tiny electronic meter for measuring blood pressure has opened a new field for understanding heart failure, shock, and other blood circulation disorders, Veterans Administration has announced. The meter, about the size of the end of a match stick, is inserted into a vein and may be gently pushed up and into the chambers of the heart and blood vessels of the lungs. The movement causes no pain or discomfort, and tissues of the veins are not damaged in any way, VA said.

Dr. Herbert O. Sieker, assistant chief of medical service at the VA hospital in Durham, N.C., has used the tiny gauge to measure blood pressure in the veins of 10 normal persons and 15 patients with symptoms of heart disease. He said he usually takes from 50 to 100 different readings for each patient.

Although doctors have long been able to measure the pulse of the blood as it is pumped by the heart through the arteries, measurement of pressures involved in return of blood through the veins has been difficult, Dr. Sieker explained.

The variations in pressure of the venous blood traced

are minute. The greatest pressures found in some of the extremities are something like the weight of an ordinary lead pencil. The little meter, called a manometer, is fastened to the end of a thin, flexible plastic wire and inserted into a vein at a convenient point on the arm. The meter contains a small float or plunger that hangs freely in a magnetic field, with the tension of a tiny coil spring. Slight variations in the low pressure of blood in the veins make the plunger move and cause electrical impulses which are transmitted along the wire to an amplifier and recording device. The results are read by the doctor as a band of waves.

Dr. Sieker said several forces may cause blood to flow back to the heart from parts of the body. One is muscular contraction around the veins, he said, and another is a sucking action created by the heart and lungs.

Dr. Sieker, who also is an assistant professor of medicine at Duke University School of Medicine, said the meter was developed by Dr. Otto H. Gauer, a German physiologist who spent several years in the United States. Dr. Gauer, with Dr. Earl Wood of the Mayo Clinic, at one time used the meter on a human patient, Dr. Sieker said.

THE NATURE OF CARDIOVASCULAR CONDITION IN NORMAL HUMANS (Part I)

THOMAS KIRK CURETON, Ph.D., F. A. P. H. A. *

THE NATURE OF CARDIOVASCULAR CONDITION

The muscles can be seen, and they are much better understood by the layman than is cardiovascular condition. The latter is a function, mainly reacting in terms of blood flow or distribution of blood, and lies hidden within the body. We cannot see the blood vessels or heart but can only test their behavior by tests commonly understood by medical doctors, physiologists and health workers. *Cardio-vascular* means *Heart + Blood Vessels*. Both heart and blood vessels are muscular organs which are capable of contracting and relaxing in ways which move the blood continuously around the body. The efficiency with which this is done is called *cardiovascular condition*.

There are several conditions under which such circulation is poor. For instance: (1) if an undue proportion of the blood is concentrated in the digestive organs, in the skin bed or in the fat depots, it cannot then be used as efficiently to carry oxygen to muscles or other internal organs such as the brain and glands; (2) if a large portion of the blood has receded to the feet or withdrawn from the systematic circulation to pool in the large veins of the abdomen; (3) if we do a relatively light exercise with unusual distress traceable to poor ability to circulate the blood through the heart and lungs easily; (4) if we perform a standard exercise and show poor adjustment or show long continued distress after the work, as indicated by relatively high pulse rates and blood pressures and slow recovery to normal values; (5) inability to adjust efficiently to hard work such as running, swimming, skating, skiing, or riding on a bicycle ergometer, running on a treadmill or rowing on a rowing machine, or any standard test exercise done continuously for endurance.

These five phases mentioned do not relate to disease and what we have to say hereafter assumes that we are working with normal undiseased subjects and in no way are trying to make a medical diagnosis of the diseased heart. We may speak of the five phases as *components*, meaning that each one is quite specific and cannot be perfectly predicted from the others. From evidence that we have, we are reasonably sure that these five components are more different from

each other than they are alike. This concept will help us to understand something about each one and how to measure it. More technically, we will mention some of the sources of data which have led us to take the position that we can measure each of these components reasonably well and that we know something about improving them by means of sports or exercises.

CARDIOVASCULAR COMPONENT I — AUTONOMIC TONE *Habitual Autonomic Tone in the Quiet State or High Versus Low Peripheral Resistance*

This component indicates the internal vascular tension that we live with in our resting hours. The blood vessels and the heart are under the control of the autonomic nervous system to a very great extent. This nervous system has the power to "gear it up" (improve circulation) for quick action, thus producing a type of psychological warm-up even without exercise. It also has the power to depress it into lethargy quite unsuited for action in the muscular sense. When we are more or less ready for action, our circulation is ready and this is what we mean by sympathetic autonomic tone. Such states come and go with little conscious thinking and happen as conditional reflexes in spite of ourselves. We may be nervous without wanting to be nervous. We might also lapse into a drowsy state in spite of ourselves. One person may react almost as in mild shock with less circulation (parasympathetic reaction), whereas, another may react in a fighting determined mood with more circulation (sympathetic reaction).

Tests of Component I

Several tests may tell us the relative status on this first component of cardiovascular condition which is highly related to the amount of blood we are circulating through the heart and lungs while being apparently "rested" in the quiet state.** These tests include (1) the basal lying (or sitting) metabolic rates; (2) the basal lying or sitting pulse rates; (3) the basal lying or sitting blood pressures; (4) ability to detect flicker in critical flicker fusion frequency tests; (5) amount of sweat on the finger tips, brow, or in the palm of the hand; (6) size of the pupils of the eyes in a standard illumination; (7) size of the basal brachial pulse waves, lying or sitting.

*Professor of Physical Education,
Director of the Physical Fitness Research Laboratory
University of Illinois, Urbana

**It is necessary to standardize the testing conditions very carefully, the same as for lying or sitting basal metabolism.

SUMMARY OF TESTS OF CIRCULATORY-RESPIRATORY FITNESS¹

Relatively Good Condition (in raw scores)	Component	Relatively Poor Condition (in raw scores)
High Schneider Index (above 11)	I	Low Schneider Index (below 8)
Low Barach Index (below 130)	I	High Barach Index (above 180)
Low Pulse Rates	I	High Pulse Rates
High Amplitude Pulse Wave with Large Area	I	Low Amplitude Pulse Wave with Low Area
Normal Metabolic Rate (0% to + 15%)	I	Low Metabolic Rate (-25% to 0%)
High CV-Index (in S.S.)	I	Low CV-Index (in S.S.)
High Flicker Detection	I	Low Flicker Detection
<hr/>		
Small Change in Pulse Rate, Lying to Standing	II	Large Change in Pulse Rate, Lying to Standing
Small Change in Pulse Pressure Lying to Standing	II	Large Change in Pulse Pressure, Lying to Standing
Low Score on Crampton Circulatory Ptosis Test	II	High Score on Crampton Circulatory Ptosis Test
Small Positive Change in brachial pulse wave, Lying to Standing	II	Large Negative Change in brachial pulse wave, Lying to Standing
<hr/>		
High Oxygen Uptake on 4' Treadmill Run at 7 Mi./Hr./8.6% (or on 5' Step Test, 30/Min.)	III	Low Oxygen Uptake
Low Oxygen Debt on 4' Treadmill Run at Rate of 7 Mi./Hr., 8.6% grade.	III	High Rate of Oxygen Debt
<hr/>		
Low Diastolic Blood Pressure After 5' Step Test (or 4' Run at 7 Mi./Hr., 8.6% grade).	IV	High Diastolic Blood Pressure after 5' Step Test
Low Terminal Pulse Rate After 5' Step Test (or 4' Run at 7 Mi./Hr./8.6% grade).	IV	High Terminal Pulse Rate After 5' Step Test
High Average Volume Rate of Respiration (L./Min.) During All-Out Run 7 Mi./Hr. 8.6% Grade.	IV	Low Average Volume Rate of Respiration
High Total Oxygen Intake (L./Kg.), or High Average Rate (L./Min./ Kg.) on All-Out Treadmill Run, 10 Mi./Hr./8.6% Grade	IV	Low Total Oxygen Intake or High Average Rate
<hr/>		
2' Pulse Count After 1' Step Test, at 30/Min. (or on each phase of the Progressive Pulse Ratio Test)	V	High Total 2' Pulse Count After each phase of the Progressive Pulse Ratio Test
Low Total Pulse Recuperation on 5' Step Test, 30/Min.	V	High Total Pulse Recuperation Count
Fast Recuperation after Schneider 5-Step Exercise in 15 secs.	V	Slow Recuperation after Schneider 5-Step Exercise

Table 1

¹Refer also to T. K. Cureton, "Physical Training Produces Important Effects, Psychological and Physiological," *Sport Medicine*, pp. 46-63, Helsinki: *Proc. of the Int. Symposium of Sports Medicine, Physiology and Related Sciences*, 1953; "The Hearts of Athletes," *Illinois Medical Journal*, 99:143, (Mar., 1951); "Six Practical Technique for Differentiating Strong Versus Weak Hearts and Circulation," *Proc. Am. Assn. for H.P.E. and R.*, 1950 (55th Annual Convention at Dallas, Texas); "Review of Research to Determine Cardio-

vascular Condition," pp. 167-177, *Proc. of the Am. Assn. for Health, Physical Education and Recreation* (56th Annual Convention at Detroit), 1951; "Comparison of 55 Middle Aged Former Athletic Champions With Some 400 Middle Aged Men and With Normal Young Men," *Am. Jour. Phys. Anthropol.*, 12:273-312, (June, 1954); *Physical Fitness of Champion Athletes*, pp. 105-374 (Cardiac, Vascular and Metabolic Studies); Urbana: University of Illinois Press, 1951.

There are several other useful tests which combine pulse rate and blood pressure in some form, such as: (8) the Schneider Index; (9) the Barach Index; (10) the Cureton Hooker Index; (11) Tigerstedt Index=

$$\frac{\text{Pulse Pressure}}{\text{Systolic Blood Pressure}} \times 100$$

(12) Boger equations (reported in Ralston, et al,) for total peripheral resistance (TPR):

$$\frac{\text{systolic blood pressure} + \text{diastolic blood pressure}}{2} \div \frac{\text{stroke volume} \times \text{time per pulse beat}}{100}$$

Several other tests are frequently used by medical doctors such as: relative contraction or relaxation of the sphincter muscle of the rectum.

The autonomic tone is a very important aspect of fitness. One can be apprehensive, tensed up internally, and resistant to efficient physical action. In this state we have relatively high peripheral resistance (TPR) due to vasoconstriction of the small vessels in the lungs, muscles and heart itself. This vasoconstriction is brought about by an anxious nervous state, and it hurts circulation. On the other hand, there may be a persistently higher circulation in people in athletic training which is indicated by somewhat higher metabolic rate or higher core body heat; by larger volume of blood ejected per beat of the heart (stroke volume) or larger brachial pulse wave; and/or by a larger Erlanger-Hooker Index of $\text{Pulse Pressure} \times \text{Pulse Rate}$, or by a larger Cureton C.V. Index, or larger Schneider Index or smaller Barach Index.***



Fig. 1 The Heartometer Machine (Cameron Co.)

The larger cardiac output is readily reflected in a larger brachial pulse wave. It is also sometimes indicated by slower pulse rate, higher oxygen intake, flicker fusion frequency threshold (ability to see faster flicker) or higher minute volume or stroke volume of the heart. Signs of sympatheticotonia include wider pupils of the eyes and relatively more sweating in places controlled by the sympathetic nerves. If we



Fig.2 Jesse Owens (40 yrs.) Takes the Quiet Sitting Cardiovascular Test

could look closely enough we could even see the hair standing up somewhat more erect. In this state, the sympathetic branches of the autonomic nervous system are thought to cause greater dilatation of the capillary beds in the lungs, muscles and heart. When the stimulation is great enough, there may be dilatation of the coronary arteries themselves. The individual takes on slight but unmistakable signs of mild stimulation just as if he were exercising. All of these

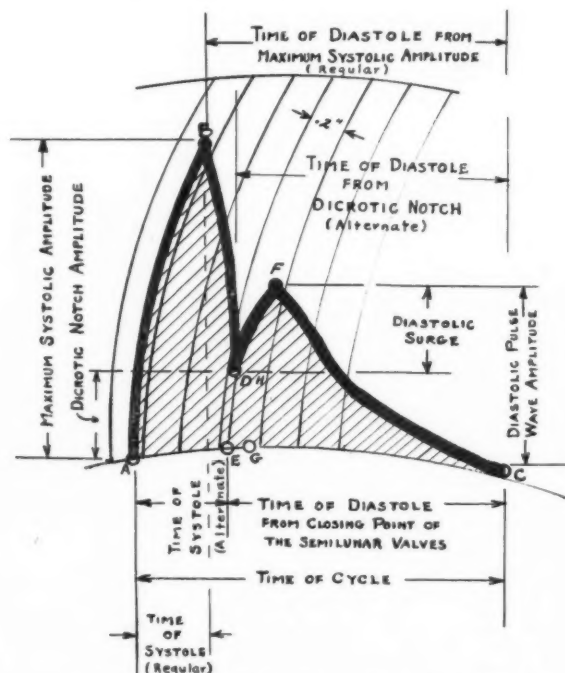


Fig 3 The Brachial Pulse Wave (Quiet State)

***References to all of these tests will be given at the close of the article.

adjustments help circulation. We see these adjustments in most of the athletes who are tested within their training seasons. Normally, we consider a bit of such sympathetic stimulation good, provided it is not excessive, because if over-done it can lead to "staleness" recognized by all athletic coaches as the result of too much stimulation continued for too long a time. Every athlete should learn how to relax from such stimulation, day by day.

The athlete with a strong heart and circulation has a slow strong heart beat, usually tall and sharp pulse waves (Cf. Fig. 5), and most usually has relatively low blood pressures whereas the anxious and nervous type of untrained person will usually have higher blood pressures, faster pulse rate, and a depressed pulse wave by comparison. Such pulse waves, if taken with standardized procedures on the heartometer machine, as outlined by Cureton (*Physical Fitness Appraisal and Guidance*, Pp. 262-268, C. V. Mosby Co., St. Louis), can be converted to stroke volume by using Michaels and Cureton's chart (Cf. Fig. 4.)

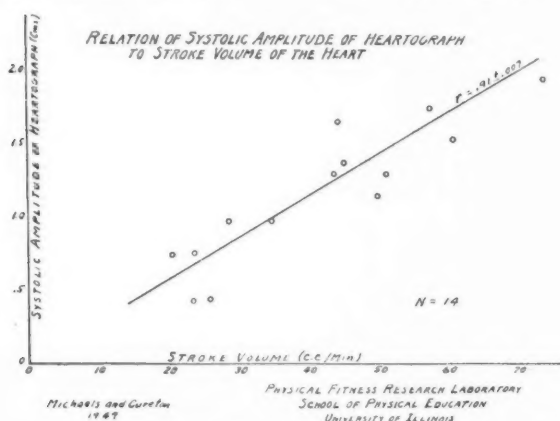
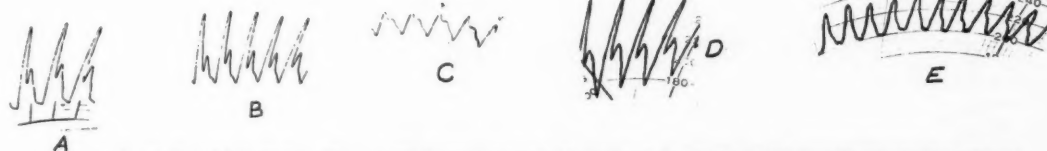


Fig 4 Conversion Chart to Stroke Volume of the Heart

Every effort should be taken to see that the tests are standardized without food in the stomach for 12 hours, with the subject in the rested state, at a standard time for all tests if they are to be compared, preferably at 8 A.M. in the morning. For 12 hours before the test, there should be no smoking, food, stimulating drinks or any exercise except easy walking. These quiet autonomic tests are the most sensitive tests made and are very much influenced by variable weather conditions and the time of the year. The test room should be of moderate temperature (70 to 84 degrees) and 40 to 60 per cent relative humidity. A relatively fast pulse above 90 will usually indicate some transient nervous excitement, so the tests should be delayed or repeated at another time. The fact that a "sympatheticotonic type" may be in an unusually relaxed mood or vice versa makes these tests relatively unreliable.

Evidence For Component I

The evidence for Component I appears in several types of studies. Since the casual reader may not be interested in the detail reports of these, they are briefed in a footnote.² Actually a high score on Component I means dilatation of the muscle capillaries and good circulation through the heart and lungs rather than vasoconstriction.³ It may be interpreted as *vascular relaxation* associated with good circulation, indicated by relatively low pulse rates and blood pressures (as in a low Barach Index, which is considered better the lower the raw score). Under these conditions peripheral resistance is low. This may be seen from the formula to calculate peripheral resistance, designated TPR: (Carl J. Wiggers, *Circulatory Dynamics*, New York: Grune and Stratton, 1952).



Untrained Brachial Pulse Waves (Sphygmograms) Compared to Trained (Sympatheticotonic) Waves
(A) Sympatheticotonic (Trained Athlete)—Emil Zatopek, Age 27; Ht. 68.5 in.; Wt. 147.5 lbs.; 10,000 m. Olympic Champ, 1948—29:29.6 for new Olympic record. **(B) Sympatheticotonic (Trained Athlete)** — Herb McKinley, age 24; Ht. 71.5 in.; Wt. 157 lbs.; World's Record for 440 yds.—45.9 sec.; 2nd Place in 1948 Olympics. **(C) Former Champion Athlete "out of training."** Andy Clark, 6 yrs. out of training was 400 m. NCAA champ in 1940. **(D) Sympatheticotonic Type (Non Athlete).** **(E) Parasympatheticotonic**—Man died within year this graph was taken, sick with prostate trouble and heart disease—59 years of age).

Fig. 5

$$\text{TPR} = \frac{\text{Mean Blood Pressure}}{\text{Stroke Volume X Time per Beat of the Heart}}$$

$$= \frac{\text{Pm}}{\text{VsXR}}, \text{ where Pm} = \frac{\text{Systolic B.P.} + \text{Diastolic B.P.}}{2}$$

Vs=Stroke Volume in cc. per beat of the heart.
R=Time per beat of the heart in secs.

By this formula the well trained athletic person has more circulation and relatively greater relaxation. This is due to the fact that the heart is usually stronger and the resistance acting against its effort to eject the blood into the aortic tree is relatively less.

Further evidence but of a negative kind comes from several studies which demonstrated that a hard "All-Out" run could not be predicted very well from tests which measure Component I (Autonomic Tone). Brown and Taylor⁴, working at Stanford University in 1943, demonstrated low validity correlations between quiet pulse rate and blood pressure test and the time of the treadmill run. This was confirmed by Brouha and Heath⁵, working at Harvard the same year. While Cureton⁶ obtained higher correlations by using longer runs like the mile, the 3½ mile steeplechase and multiple correlations from combining four types of running endurance (R=0.806) at the University of Illinois in 1945, the evidence indicates that the short hard run on the treadmill up to seven minutes other factors than autonomic tone. This will be shown to be Component IV, namely, *fast circulatory adjustment to hard work*. Hunsicker⁷ also showed that combination tests like the Barach, Schneider, Erlanger-Hooker and several similar tests were not highly correlated with "All-Out" treadmill running at ten miles per hour, 8.6% grade, and Henry found little change

²In the 1939 factor analysis of Larson [A Study of the Validity of Some Cardiovascular Tests, New York: Ph.D. thesis, New York University, 1938. Pp. 137. Published abstract in *Jour. of Exp. Ed.*, 7: 214-220, (Mar., 1939).] a dominant factor emerged which he named *Peripheral Resistance* as indicated by high diastolic pressure, high systolic pressure, high pulse pressure X pulse rate and high Gale metabolic rate. We think that this is simply high *Circulation*, just the opposite to high *Peripheral Resistance* but we are talking about the same thing because his factor loadings are all minus. His factor loadings indicate that the circulation is best indicated by the Erlanger-Hooker Index (-.9463) obtained by Pulse Pressure X Pulse Rate. The next best test is the Erlanger-Hooker Index + Diastolic Pressure (-.9283), which is about the same as Gale Metabolic Rate (-.9239). The next highest test is the Tigerstedt (-.8200). All of these tests indicate blood flow. He also proved that the McCurdy-Larson Organic Efficiency Test was a poor test of this factor of circulation (-.2546). In the 1940 factor analysis of Mary Agnes Murphy [A Study of the Primary Components of Cardiovascular Tests, *The Research Quarterly*, 11: 57-71, (Mar., 1940).] a similar factor emerged which she called "Heart Rate Condition" indicated by relatively low pulse rates lying, sitting and standing, and also low pulse rates after a 15/min. step test.

³The relaxed state which permits good circulation is indicated by low pulse rates, low systolic and diastolic blood pressures, by a high Schneider Index, all in raw scores. In 1947, Cureton's CV Factor [Factor Analysis of 22 Physical Fitness Tests, Pp. 532-547, *Physical Fitness Appraisal and Guidance*, St. Louis: C. V. Mosby Co., 1947.] also indicated better vascular relaxation as scored in standard scores: = .63 (Schneider Index S.S.) + .48 (Quiet Sitting Diastolic Blood Pressure, in S.S. with the top of the scale low rather than high).

⁴G.E. Brown and C. Taylor, "Some Observations on 325 Schneider Tests of Healthy Young Men," Washington, D.C. Report No. 9 to the Committee on Aviation Medicine, Office of Scientific Research and Development, (June, 1943).

⁵L. Brouha and C. W. Heath, "Resting Pulse and Blood Pressure Values in Relationship to Physical Fitness in Young Men," *Jour. Med.*, 228: 473-477, (April 15, 1943).

⁶T. K. Cureton, Jr., et al, "Experimental and Statistical Studies of the Step Test," Pp. 187-194, *Endurance of Young Men*, Washington, D. C. (Monograph No. 1, Serial No. 40, Soc. for Research in Child Development, National Research Council, 1945).

⁷Paul Hunsicker, "A Validation of Cardiovascular Tests by Cardiac Output Measurements," Urbana: Ph.D. thesis in P.E. (unpub.), U. of Ill., 1949. Hunsicker's evidence showed the Barach Index was the best of 15 tests to predict "All-Out" treadmill running time, the highest correlation being r=0.44. He decided to use the criterion of Gross Oxygen Uptake in Liters per Minute because he considered this a real circulatory criterion, following the logic worked out by our laboratory group. The highest correlation he could get was 0.48 with the oxygen uptake criterion. Henry and Herbig ("The Correlation of Various Functional Tests of the Cardiovascular Systems with Changes in Athletic Conditions of Distance Runners," *The Research Quarterly*, 13: 185-200, May, 1942) at the University of California found in 1942 that the Barach Index correlated -.49 with improvement in the 880 yard running time, while the Schneider index was +0.44. These relatively low correlations indicate that all such quiet measures of pulse rate and blood pressure are not very valid for indicating All-Out capacity in a short, hard effort of 1 to 7 mins. but they are still very valid for indicating the autonomic tone (sometimes called Pulse Rate Condition).

The autonomic tone is rated poor if high peripheral resistance is indicated by the equations of Wiggers (*Circulatory Dynamics*, New York: Grune and Stratton, 1952. Pp. 107) or those of Wezler-Boger as given by Ralston (H.J., D.E. Guttentag and E. Ogden, "Evaluation of the Ratio of Aortic Rigidity to Peripheral Resistance," *Proc. Soc. Exp. Biol. and Med.*, 53:154-156, 1943.). Attention should be called to Henry's use of these equations in his 1954 article on the effect of athletic training upon the resting cardiovascular condition and to calculations with these equations as used by McAdam [Robert E., "An Investigation of the Effects of Physical Training on Cardiovascular Components in the Adult Male," Urbana: Ph.D. thesis in Physical Education, U. of Ill., 1955. Pp. 127] and Cureton ["Relationship of Physical Fitness to Athletic Performance and Sports," *Jour. of the Am. Med. Assn.*, 162: 1139-1151, (Nov. 17, 1956).].

High cardiac effort to overcome the high peripheral resistance is indicated by relatively high Pulse Pressure X Pulse Rate (Erlanger-Hooker Index). If men are trained very hard, and faster than they can adjust, their blood pressures will rise and also their pulse rates, indicating tension. Their pulse pressures will rise as will the Tigerstedt and Stone Indices, both of which have pulse pressure in the numerator. When trained too hard, they may exhibit too much "sympatheticotonia" rather than the desired small amount. They may then become unstable in temperament. In this state they will exhibit relatively high cardiac effort with fast pulse and high systolic blood pressure, along with high diastolic pressure. These are indications of internal vascular tension typically associated with nervous anxiety. Overtrained men exhibit these tendencies.

in trained athletes within a season of track training. Of the quiet tests, the one most highly correlated with running endurance is the Brachial Pulse wave taken on the heartometer (T. K. Cureton and B. H. Massey, "Brachial Peripheral Pulse Waves Related to Altitude and Endurance," *Am. Jour. of Physiol.*, 159: 566, Dec., 1949).

The Autonomic Nervous System

The autonomic nervous system innervates all of the smooth muscles and various glands of the body, and also the muscle of the heart. The efferent autonomic fibers which leave the central nervous system in connection with the cranial and spinal nerves all end in sympathetic ganglia and are known as *preganglionic* fibers. From these ganglia postganglionic fibers arise and conduct impulses to the different organs. In addition, afferent or sensory fibers connect many of these structures to the central nervous system

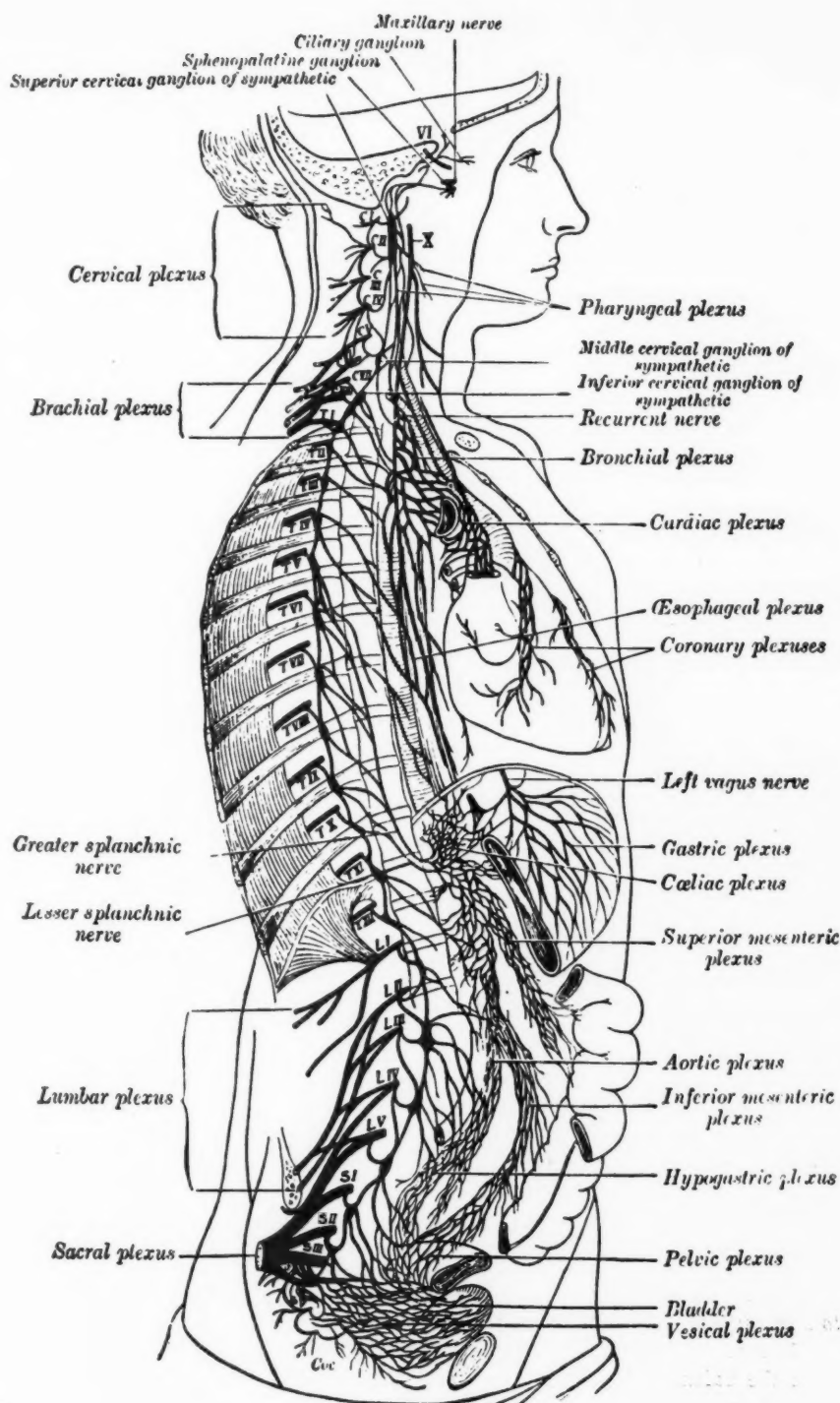


Fig. 6. The Autonomic Nervous System

From Gray's Anatomy
P. 975 (21st. ed.)
Lea & Febiger Publishers
Credited after Schwable

Intravenous injections of acetyl-choline act to stimulate the cranial and sacral sympathetic nerves, while the injection of adrenalin produces stimulation of the thoraco-lumbar sympathetics. Nicotine paralyzes the synapses between pre-ganglionic and postganglionic fibers. The terminology of the autonomic nervous system is confusing because it has changed with various authors:

Gray

Sympathetic nerves.

Cranio-sacral sympathetics.

Sacral sympathetics.

Thoraco-lumbar sympathetics.

Langley

Autonomic nerves.

Parasympathetic.

Sacral autonomies.

Sympathetics or Thoracic autonomic.

Meyer and Gottlieb

Vegetative nerves

Autonomic

Sacral autonomies.

Sympathetic.

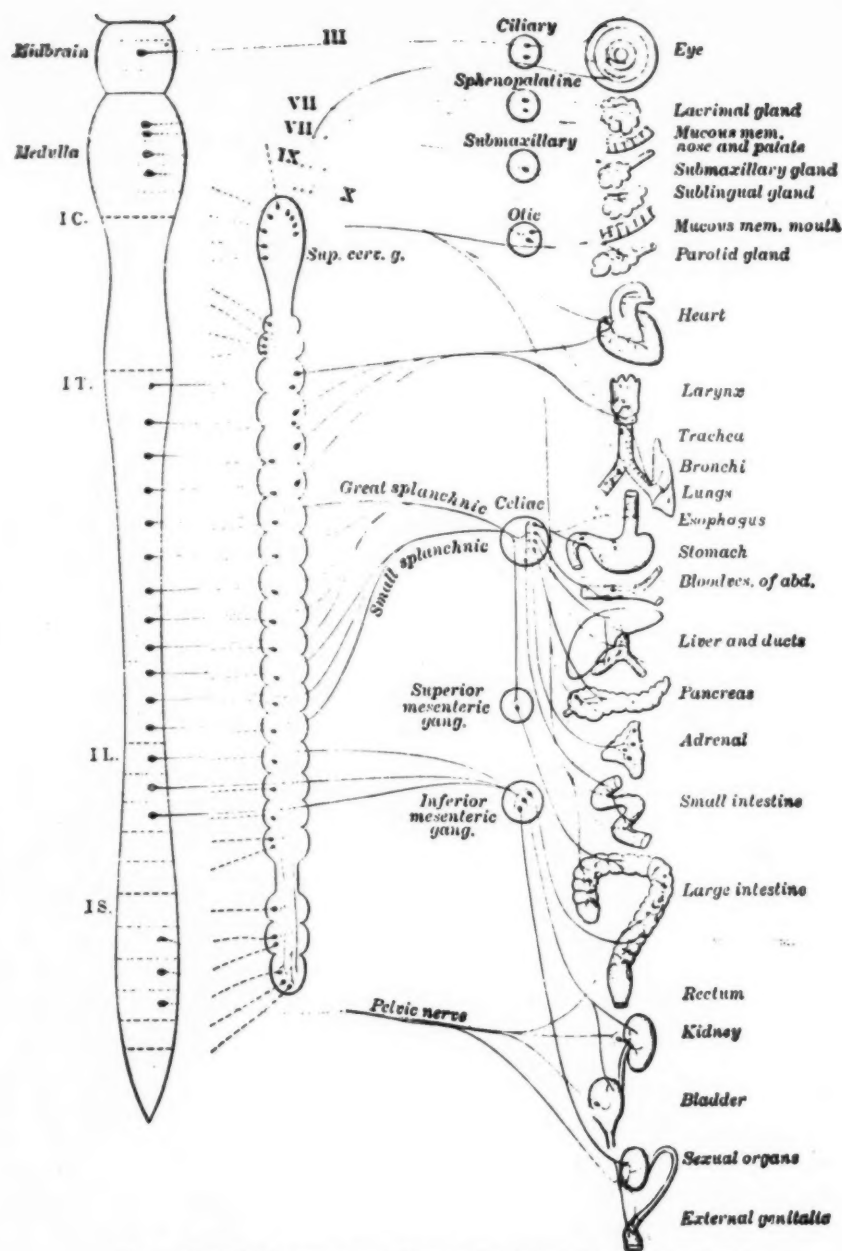


Fig. 7. Control of Organs and Viscera By Autonomic Nervous System

Balance in the Autonomic Nervous System, Related to Athletic Training

Nervous temperament hinges to no small extent upon the balance of the *autonomic nervous system*. The autonomic nervous system has not been very well understood. Not all of the evidence is in as yet. It is certain that the glands, and many of the organs, are directly under the effect of the autonomic (vegetative) nerves, as has just been pointed out in the case of blood vessels. While it is not the purpose here to go

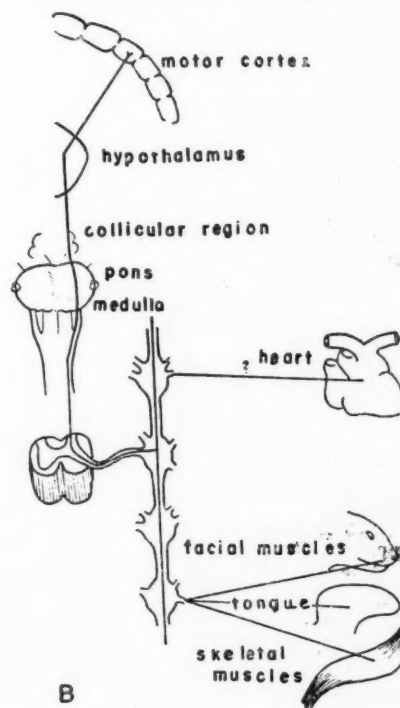
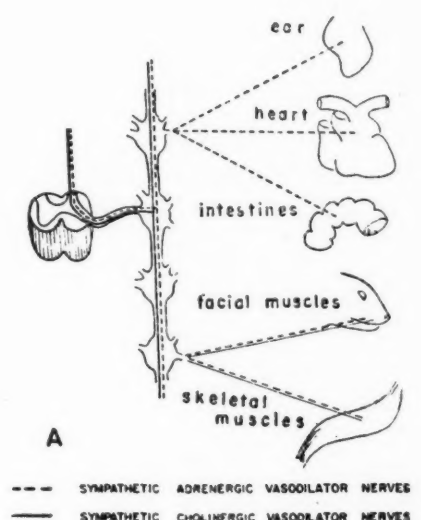
intensively into the anatomy or physiology of the autonomic nervous system, it is important to give the concept that exercise, persistently taken, can affect the balance of the sympathetic versus parasympathetic dominance. Figs. 6 and 7 show the distribution of the autonomic nerves. Exercise stimulates the thoracolumbar sympathetic nerves, which in turn affect the blood vessels, eyes, heart, adrenal glands and skeletal muscles of locomotion so that there is better blood flow to fight or flee.

It is our concept that persistent exercise will leave the autonomic nervous balance so that there is habitual mild stimulation, characterized by better blood flow, somewhat higher basal metabolism, slightly higher body temperature, slightly wider pupils of the eyes and relatively greater disposition to exercise. So long as exercise alternates with relaxation and adequate rest between bouts of exercise the mild sympathetic stimulation is not harmful. It represents only a mild toning or warm-up for action. It is common to find athletes "thinking" action just before a time trial. Beyond a doubt, such anticipation causes some "nervous readiness" for action. This is why athletes are commonly found with better blood flow and all the other characteristics of mild sympathicotonia. The one exception, which has long been confusing, is that along with larger brachial pulse waves, greater stroke and heart minute volume (blood circulated per minute), the pulse rate has usually been found to be lower. This will bear a special explanation.

There are two possible explanations of the slow heart rate in well-conditioned athletes, contrasted to the relatively faster pulse rates of these same athletes when they are "out of condition." The first explanation centers on the possibility that the trained athlete has relatively greater volume of his blood vessels due to increased capillarization of the small vessels throughout the body. With this condition there is better circulation, so the need for blood is less, due to the circulation already being good enough. With relatively greater need or with mental excitement, the heart rate speeds up. Bainbridge, one accepted authority on the inner mechanisms of the heart, states that with larger stroke volume in the quiet state, there is usually slower heart rate. Another authority, Torgny Sjostrand^a states that the stroke volume of the left ventricle is determined by the pressure relationships in the aorta and by the vegetative (autonomic) nervous system and shows that this is related to the T-wave of the ECG, and also shows that slow pulse rates are related to elevated ST segments of the ECG. These observations suggest that the ECG is diagnostic of autonomic tone.

The second explanation of the slower heart rate in athletes with somewhat higher sympathetic stimulation

^aTorgny Sjostrand, "Determination of Changes in the Intrathoracic Blood Vessels in Man," *Acta Physiolog. Scand.*, 22: 114-128, 1951.



A. TRADITIONAL VIEW OF THE VASODILATOR FIBERS TO VISCERA

Vasodilator Fibers From the Sympathetic Nerve Chain

Older view maintained that the heart, intestines, facial muscles and skeletal muscles were controlled by autonomic nerves with no connection to the higher brain centers.

B. NEWER VIEW OF THE VASODILATOR FIBRES (from Borje Uvnas, *Physiological Reviews* 34:610, July, 1954).

Significance: The sudden flushing of the face as in blushing, or reddening of the ears, are examples of vasodilator action. These areas suddenly become flushed with blood, or in great exertion they may pale due to vasoconstriction. In exertion the tongue may literally sweat as in a dog, or it may redden with blood in a man; the heart may become flushed with blood and also the skeletal muscles in exertion when the sympathetic nerves are strongly active.

Modern view is that stimulation of autonomic nerves may arise in the motor cortex of the brain, hence may be affected by physical activity.

Fig. 8

lation (tone) is in connection with a relatively new discovery that has proved that sympathetic vasodilator fibers are definitely present to the coronary arteries of the heart. If these vessels of the heart are dilated at rest, there is undoubtedly better blood flow and possibly slower heart rate for this reason. When there is a muscular demand for more blood, this mechanism causes the heart rate to accelerate to meet the need but at rest the heart rate may be even slower than normal. Borje Uvnas*, of Finland, has published an extensive paper upon the reality of the "Sympathetic Vasodilator Outflow" showing that the vasodilator neurones take their origin in the cortex of the motor brain and also in the skeletal muscles. They are stimulated by "Thinking Action." When they are active, they cause more blood to leave the skin reservoir and appear in the systemic circulation. This explains the larger pulse waves, larger stroke volume and better "readiness for action."

Both of the above explanations lead to the same end result, namely, there is better circulation to the brain, muscles and central glandular axis. This means that there is more readiness for exertion. The *vagus nerve*, which has long been accredited with slowing the heart rate, contains sympathetic (as well as parasympathetic fibers and it is not possible any longer to say that the vagus nerve is always dominantly parasympathetic in action, and that the heart rate is slowed mainly by the parasympathetic fibers. It may or it may not be. This all sounds very complicated but, for those who are interested, it is important to realize that the relatively slower heart rate of the athlete is associated with better rather than poorer circulation and weaker heart action.

Changes in Autonomic Tone Due to Persistent Exercise

It follows that an individual unbalanced far to the left could possibly be helped by the practice of exercise along so persistent a pattern that it would act to normalize him. Our concept is shown in Table II.

It is true that in the typical improvement of circulatory-respiratory measures, the position of the person moves from the "out of condition" toward "in condition." This is normally associated with slowing of the pulse rates if the training is hard enough to cause greatly increased capillarization. The brachial pulse waves increase in amplitude and area. There is marked improvement in endurance ability generally. Many individuals have appeared to shift from a position somewhat left of center to a position in the center or somewhat right of center. Occasionally, when the training efforts are very intensive, there may be a shift too far to the right, commonly called "over-trained" or "stale." Temperamental outbursts are likely to occur. One such instance may be mentioned. This was the case of a famous sprint star who was training for his Olympic berth in the 100 m. dash. After weeks of work, his coach said to him one day, "That was awfully poor, can't you do better than that?" The track star took off his spiked shoes, walked over to the coach, struck him on the chest with the shoes, and walked off the field, saying, "When you see me again, you will know it!"

Alexander's Concept of Autonomic Nervous Balance Related to Personality and Mental Health

Alexander¹⁰ has presented an interesting concept of the necessity for a balanced autonomic nervous system. He postulates, as shown by Fig. 9, that there are two extremes: (1) at the left the extreme parasympathetic dominance, characterized by the "need for being taken care of" feelings, and associated disturbances of peptic ulcer, constipation, diarrhea, colitis, fatigue states and asthma. This type of person shows inferiority feelings and usually overcompensates by exhibiting false "front," braggadocio, and unusual attempts at independence, (2) at the far right the extreme sympathetic type of nervous dom-

*Borje Uvnas, "Sympathetic Vasodilator Outflow," *Physiological Reviews*, 34: 608: 608-618, (July, 1954).

¹⁰Franz Alexander, *Psychosomatic Medicine*, Pp. 36-38, 64, 73-80, New York: W. W. Norton Co., 1950.


NORMALLY BALANCED INDIVIDUAL		
UNBALANCED PARASYMPATHETICALLY DOMINATED INDIVIDUAL Avoids action Grieves internally Overcompensates in attempts at friendliness, sociability. Infantile in dependency. Trained to sit.	Poised Average Metabolism Average Circulation Typical Individual "Out of Condition"	 Typical Athlete's Position "In Condition"
UNBALANCED SYMPATHETICALLY DOMINATED INDIVIDUAL Craves action. Upset easily and fights. Hostile, Unsocial. Over-competitive. Over-trained.		

Table II

Schematic illustration of the concept of specificity in the etiology of the disturbances of vegetative functions



This diagram shows the two kinds of vegetative responses to emotional states. On the right side of the diagram are shown those conditions which may develop when the expression of the hostile aggressive impulse (fight or flight) is blocked and is absent in overt behavior; on the left side appear those conditions which develop when the dependent help-seeking tendencies are blocked.

Fig. 9

inance, associated with competitive aggressive attitudes, hostility, fight or flight. Abnormal tendencies are migraine, hypertension, hyperthyroidism, cardiac neuroses, arthritis, vasodepressor syncope (collapse) and possible diabetes.

It is obvious that athletic competition should be kept under good control. The effort should be always in the direction of tempering such competition with good sportsmanship, comradeship, and reasonable restrictions on the frequency and intensity of competition. In its most intensive aspects can lead to certain derangements of the temperament, as are occasionally seen in overworked athletes.

The nervous tension associated with hard training can react negatively to cause the symptoms known as "athletic staleness." These are depressed pulse waves, depressed R and T waves of the ECG (CR IV-V), abnormally high basal metabolic rate, high pulse rate and blood pressures, excessive ventilation and abnormally low RQ in the basal state.

Baldwin and Shaw, at the University of Southern California, demonstrated the psychic tension in two football players, using two non-players as controls. It was shown that the football players reached progressively higher levels of basal metabolic rate as the season advanced and competition became more intense. In the controls, this psychic influence was absent. Starting at 26.5 cc/min. to 285 cc/min., as the games got more important, the basal oxygen consumption rose progressively to 1150 cc/min., but after the games were over it receded to values close to normal.

H. Mies¹¹ demonstrated changes in autonomic tone on 21 students of physical education after ten

weeks of strenuous training. He found that after training, calcium, potassium, pyruvic acid, lactic acid, alkali reserve and coagulation time all rose more rapidly and lasted a longer time. This represents a prompt and coordinated response of the adrenergic elements of the autonomic nervous system and a suppression of the cholinergic ones.

Relatively high emotional tone may be said to be sympathetoconic. In "pep" talks or suddenly after a great victory, athletes become very keyed up. When Bob Richards won his great pole vault victory at Helsinki, he whooped and shouted, then ran over and gave his Russian competitor a bear hug. Dr. Prezelj Franc¹² in a recent article claims that the vegetative state called herein "sympatheticonia" is helpful to athletic efficiency and is just what is usually found in the well trained athletes.

Such athletes are trained away from neuroses. Freud has claimed that every neurosis consists, to a certain degree, of withdrawal from action. It is implied that exercise can affect mental and emotional condition. In fact, it is commonly observed that wholesome action in games and sports reduces mental tensions, anxiety and gastrointestinal symptoms. Alexander makes a point of inhibited mental tensions and inhibited aggressive tendencies causing serious mental derangements. Physical exertion seems to provide genuine relief, probably because the emotions can be more fully expressed in such activities than they can in polite society. Under proper supervision

¹¹H. Mies, "Untersuchungen über die 'Vegetative' Umstimmung im Training," *Acta Neurovegetative*, 8:149-157, 1953.

¹²Dr. Prezelj Franc, "Vegetative Dystonia and Problems of the Athlete's Heart," *Sportnemedicinske Objave*, 3:89-107, (January, 1955), (translated from the Czechoslovakian).

A DAY IN THE LIFE OF A BUSINESS MAN'S STOMACH

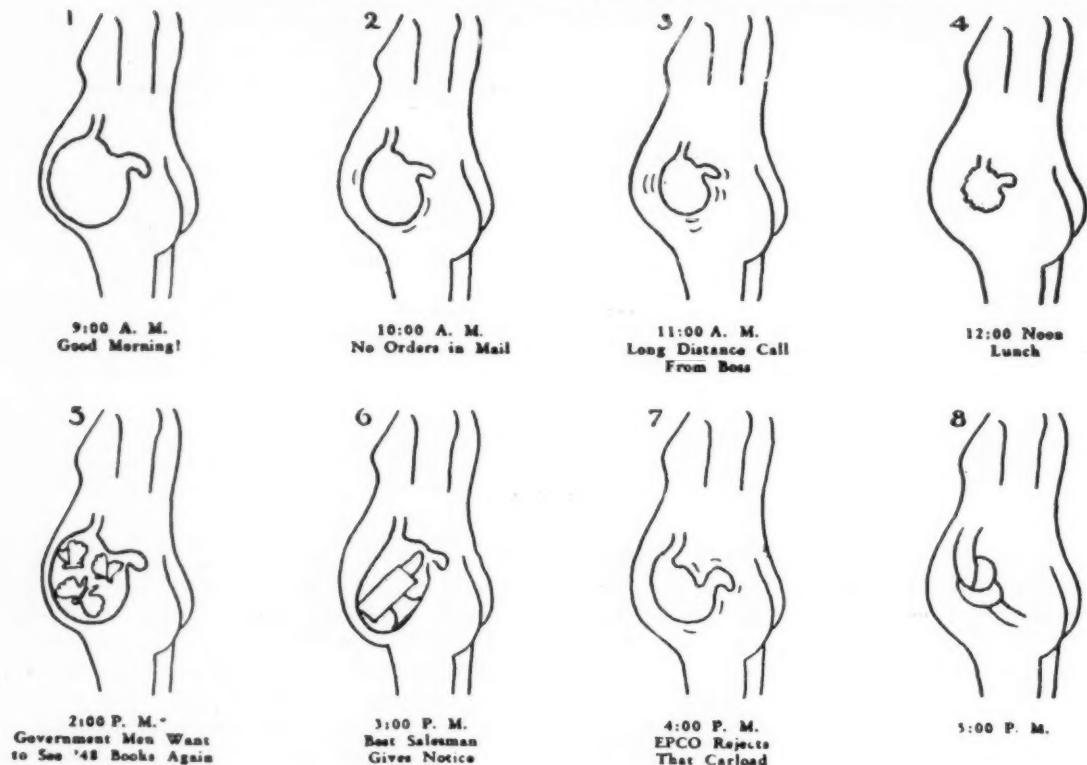


Fig. 10

(Courtesy of Jay Bender, Ph.D.)

and within ethical and moral bounds such "releases" are good. They have a wholesome effect upon the personality.

The association between the autonomic nervous system and the endocrine system is so close that we cannot separate them. A recent review has appeared which elaborates this connection fully:¹²

The circulatory inadequacies of the adrenalectomized animal and its easy fatigability are well established phenom-

ena. If the isolated muscle is supplied with adequate oxygen and nutrients it does not fatigue rapidly. It appears that muscular fatigue of the adrenalectomized animal is not due to an impaired musculature or myoneural junction but to circulatory collapse.

¹²E. R. Ramey and M. S. Goldstein, "The Adrenal Cortex and the Sympathetic Nervous System," *Physiological Reviews*, 37: 155-195. (April, 1957).

Part II of this article will appear in Vol. 12, No. 1, Jan.-Feb., 1958.

JOINT COMMISSION STUDYING REHABILITATION OF EX-MENTAL PATIENTS

The Joint Commission on Mental Illness and Health is currently conducting a study of voluntary organizations of ex-mental patients in the United States. It is interested in obtaining the names and addresses of such organizations.

The Joint Commission, made up of representatives from 27 national agencies, including the Association for Physical and Mental Rehabilitation, concerned with some aspect of mental health, is a nongovernmental agency operating under Federal and private grants. It is now in the second year of a comprehensive analysis and evaluation of the United States' needs and resources for fighting mental illness and promoting mental health. The purpose of the national survey is to seek new or improved approaches to the nation's mental health problem, and to arrive at

authoritative judgments as to how a national mental health program may best be implemented.

Among the twelve separate projects in progress is a study of the rehabilitation of the ex-mental patient. Particular attention is being given to various organizations and agencies which seek to help the ex-mental patient readjust to community life, and thus reduce the possibility of a relapse. As part of this effort, the Joint Commission is seeking to determine what role voluntary ex-patient organizations may serve in the rehabilitation of the former mental hospital patient.

Information about organizations of this nature should be addressed to Dr. Henry Wechsler, Joint Commission on Mental Illness and Health, 808 Memorial Drive, Cambridge 39, Massachusetts.

TRENDS IN REHABILITATION CENTERS

GEORGE V. DEVINS, B.A., C.C.T.

INTRODUCTION

This paper considers rehabilitation centers as they are developing in the eastern section of the United States. The material concerning different centers was reviewed from the standpoint of (1) Type, (2) Organizational Pattern, (3) Staffing, and (4) Type of Service Rendered (this involves the type of patient treated). In addition to the material covered in publication, personal visits have been made to observe two distinctly different clinics; the Kessler Institute for Rehabilitation and the Walter D. Matheny School.

During the last ten years various types of centers have been established to meet the need of the disabled in community or rural areas. Within a radius of sixty-five miles from New York City, one can find practically every type of center because of the nature and spread of the population. An example of the metropolitan type center is that of the N.Y.U.-Bellevue Center in New York City. It is located in a busy city and utilizes more than one floor of a building. A suburban type center is that of Kessler Institute which is located in a beautiful setting in West Orange, New Jersey. Finally, in a strictly rural location is The Matheny School which is somewhat isolated and posed on the crest of a hill overlooking some of the most beautiful countryside in New Jersey.

In order to briefly review the recent history of rehabilitation centers, certain articles were reviewed.

Park¹ points out that in 1944, Dr. Frances A. Hellebrandt, then director of the Baruch Center, proposed a loosely knit institute type organization. Its functions were (1) to serve the sick through the rational use of physical therapeutic procedures, (2) to contribute to the advancement of human knowledge in the field of physical medicine through systematic, basic and clinical research and (3) to provide educational facilities for training of technical personnel in the practice of this branch of medicine. Semi-autonomous units were organized. Dr. Park describes later developments at the Center and states, "Throughout these formative years the most harassing feature hindering the full development and coordination of the Center was the *physical separation* of the various units, and the fact that the Center was housed in temporary quarters. The author goes on to indicate that during World War II enough stress was exerted

to put the Baruch Center in a permanent consolidated location. The final major physical goal was achieved in 1949 with the acquisition of the Memorial Hospital Building where the department activities were consolidated. This example illustrates the trend to centralize services.

Today, the trend in centers is to concentrate the essential services under "one roof," and then to recognize that there are other services required for patients prior to admittance and following discharge from the center. Redkey² states, "The current concept is to have a concentration and simultaneous approach to all the major problems (1) Medical (2) Social (3) Psychological and (4) Vocational. Special emphasis is placed on evaluation. Several procedures may proceed or follow the concentrated program and the attempt is made to relate these to the experience in the Center."

A meeting on Rehabilitation Centers was held in Chicago in the spring of this year. The conference was made up of many types of organized units meeting a variety of needs of the physically or mentally handicapped. The purpose of the conference was to exchange ideas and evaluate the contributions that centers are making to society. Conferences of this type allow for research and re-evaluation of the centers as they attempt to improve their services. The two clinics most recently visited are members of this conference.

Hamilton³ cites reference to the Report of the Committee on Severely Handicapped, which states that there were more than 580 specialized shops and various type centers in the United States in 1947. Hamilton as far back as 1950 stated, "If the severely handicapped are to become completely employable (approximately 12 percent may become so), the process of rehabilitation must be supplemented and intensified. These supplementary services may be either prior to, or simultaneous with, the other aspects of the process of rehabilitation, the point being that in such instances the intensified services become a part of the process of rehabilitation." Hamilton goes further to define centers of the restorative type which

¹Physical Medicine and Rehabilitation Service, Veterans Administration Hospital, Roanoke 17, Virginia.

¹Herbert Park, "The Progress Report of the Baruch Center of Physical Medicine and Rehabilitation," *Archives of Physical Medicine and Rehabilitation*, 35:11, Nov. 1954.

²Henry Redkey, "Rehabilitation Centers," *Archives of Physical Medicine and Rehabilitation*, 38:4:227, April 1957.

³Kenneth W. Hamilton, "Counseling the Handicapped," Ronald Press, 1956, P. 223.

deal largely with medically prescribed treatment such as physical or occupational therapy, and the true rehabilitation center that is all inclusive in that social, psychological and vocational aspects are considered. He further points out that there are other names for rehabilitation centers, such as curative centers, sheltered workshops or rehabilitation clinics.

With the preceding paragraphs pointing up the trends and the types of services and centers, it is in order to discuss the two type centers previously mentioned. Kessler Institute was selected because it is world famous due largely to Dr. Henry H. Kessler, its dynamic Medical Director, to his skill as a surgeon, and his ability to select a staff to carry the medical and public relations programs for the organization. Secondly, it is in the process of building and is following the newer trends in rehabilitation centers. It has a training and research program recognized as part of the modern rehabilitation center. The writer was fortunate to have Mr. William Page, Administrative Officer, escort him through and explain the highlights of the center.

THE KESSLER INSTITUTE FOR REHABILITATION *Organization*

The Institute is a voluntary, non-profit organization for treatment of handicapped men, women and children regardless of race, creed, color or economic status. It has a Board of Trustees consisting of a president, two vice-presidents, a secretary-treasurer, and ten board members. The medical staff consists of a medical director and a clinical director. There is an administrator or coordinator for the center and an attending staff of nine doctors. They represent industrial medicine, plastic surgery, internal medicine, general surgery, urology, dentistry, orthopedic surgery and neurosurgery. There is a consulting staff covering the specialties of physical medicine, dermatology, general surgery, internal medicine, administrative medicine, gynecology, radiology, geriatrics, ophthalmology, orthopedic surgery, psychiatry, pediatrics, proctology, otolaryngology, speech therapy, speech pathology and clinical psychology. Professional staff giving rehabilitation services includes: occupational therapy, speech therapy, physical therapy, medical, dental and nursing care, and social service. Other services are on a consultant basis. There is recreational activity planned by one of the board members who presents programs, conducts fund raising and educational programs. The administrator carries on services such as education, community relations, international activities and research. Frequent lectures for community and staff benefit are arranged as part of the in-service training program. Another committee of ex-

treme importance is the public relations committee consisting of thirteen outstanding citizens, any one of whom could do an outstanding public relations job.

Financing

The Institute operates without a permanent endowment or subsidy from any private or governmental group. It is dependent on gifts from foundations, groups and individuals to carry on its work. Only a part of the revenue is received through patients' fees with the demand for free service increasing.

Patients Served

The Institute received recognition because of its work with amputees, but in recent years the programs sponsored by the United Mine Workers Union, insurance agencies, and other foundations have included all types of patients. At present the center is currently serving forty-eight in-patients and ninety out-patients in various categories of disability, such as paraplegics, hemiplegics, amputees and victims of other orthopedic and neuromuscular disabilities. It must be noted that extensive screening takes place so that only those who can benefit from one of the center's services may be accepted for treatment. There is a "rehabilitation risk" with every patient. This is the chance that he will succeed or fail in his rehabilitation. It must be assumed that the possibilities are slight that the patient will fail. This, of course, makes for a good record in treatment since all are potential successes. Such a technique was used by Sister Kenny in her work with poliomyelitis. She selected patients with good muscular potential. Most centers must resort to this type of screening because several failures could make a center ineffective for a period of time. Such cases are time consuming and should be in a hospital where continuous treatment is possible.

Facilities at the Institute

Since its founding in 1949, there have been some fine additions to the original structure that was inadequate to house the patients and services needed. The Fred H. Albee Memorial Library, which holds many of the latest publications, is for use of staff and professional visitors. In December 1953 a new treatment building was added. This is a very large airy room with a stage arrangement at one side with two sets of parallel bars on it, and it is exposed through to the outside by a wall of glass. This is the brightest spot in the entire area. This writer's deepest impression of the work being accomplished was made when a little girl, no more than four years of age, with a congenital right arm and leg amputation and a left leg deformity also requiring an artificial means of walking, came

by and greeted everyone with a smile and cheerful "hello." The center has a very convenient kitchen and a pleasant dining area where staff and patients eat. The self-care (or activity of daily living) area has training equipment for getting in and out of bed, and includes the use of toilet and bath facilities. There is a quite large occupational therapy shop, an examining room where physical examinations are conducted, a dental laboratory, and a conference room. The Medical Director, the Clinical Director, and the Administrative Officer have separate offices. All offices are strategically located for their respective functions in the Institute. The newest addition is a work tolerance or testing room next to the occupational therapy clinic, and it will be used to determine the patient's capacity to work. It will be staffed by a manual arts or industrial therapist trained in this type of work. The dedication was to take place the Saturday following the writer's visit.

Treatment and Training Programs

The key to the treatment program is the systematic review of patients conducted once a week by the Medical Director, the Clinical Director, and the professional staff. Here, changes in treatment are made, new objectives are established, and a total re-valuation takes place in regard to the needs of the patient and the effectiveness of the program. There is a physical medicine and rehabilitation residency training program in effect for the purpose of training physicians in that specialty.

The patient's day is a day full of physical activity where he trains for his goal of self-reliance. His routine may be interrupted at any time to illustrate to a visitor from a foreign country his ability and what he has learned. Because the Institute is represented on International Boards of Organizations, many visitors from outside the United States visit this clinic. At this writing the administrative coordinator is preparing to attend a conference in London, England. Dr. Kessler believes that rehabilitation is an area that is the concern of all nations, and it is a medium through which much understanding may be gained among nations.

The impression of this writer in regard to the Institute is that there is a considerable amount of work being accomplished, and that there seems to be ample staff for the number of patients treated. Above all, there is a feeling of well-being among patients and staff alike, and this is an important factor in recovery.

WALTER D. MATHENY SCHOOL

The second rehabilitation center visited was entirely a different setting, and certainly the words of Dr. Namen, Chief of Physical Medicine and Rehabilitation at VA Hospital, Lyons, N. J., will remain with

the writer for many years: "You may see them all, but this one you will never forget." He was speaking of the Walter D. Matheny School at Peapack, New Jersey.

This school like Kessler Institute is non-profit, non-governmental, non-political, non-sectarian. Its beginning came about 1946 and was initiated to equip, maintain, conduct and operate a school for the education, care, treatment and vocational guidance of cerebral palsied children. Probably the most significant factor related to this school is the fact that Mr. and Mrs. Matheny have a boy who is a cerebral palsied child. Mr. Matheny proudly claims his son as one of the most severely afflicted patients who at this time has become an out-patient. He walks unassisted from the house to the clinic and qualifies for out-patient status.

Organization

This school has a nine-member board of trustees. The officers of this group are the president, secretary and treasurer. The consulting staff consists of outstanding physicians in physical medicine, cerebral palsy, orthopedics, pediatrics, speech therapy and psychology. The director is Mr. Matheny, assistant director, Mrs. Matheny, and business manager, Mr. Hughes. There is a visiting professional staff including specialists in orthopedics, pediatrics, general medicine, internal medicine, ophthalmology, dentistry and psychology.

Financing

The financing of this school does not seem to be a problem. It is backed by various organizations and agencies such as Crippled Children's Society, State Rehabilitation. Federal grants and private donations.

Patients Served

Regardless of creed, color or religion, patients are received at the school. Children from all over the world come to the school for treatment. They are referred from clinics such as Bellevue Hospital Clinic in New York, and many others. There is one stipulation and that is that the center must be able to benefit the patient. Patients are screened very carefully and evaluated physically and psychologically to determine their abilities. Such an evaluation was in progress when the writer visited the school. The question was whether a lad being evaluated was capable of further achievement. This case was a state rehabilitation case, and the State was asking if the money expended was effective. The Board for this evaluation consisted of the consultant in orthopedics, the pediatricist, the psychologist and the professional staff. The question was, could this five year old become self-sufficient as far as self-care and toilet training was concerned? The decision was to give him one month's additional con-

centrated training, and then to reevaluate him again.

The youngsters treated are of all ages and are very interested and happy in what they are doing. There are spastic and flaccid types in all phases of the program.

Professional Staff

There are specialists in occupational therapy, corrective therapy, physical therapy, educational therapy, speech therapy, nursing and specialized training for blind. All staff members live at the school. Volunteers also assist in this program and come from small towns some distance away.

Facilities

All rooms and areas are new and are very attractively and tastefully decorated, depending on the age of the occupants. They might be decorated with a nursery theme or a scene worthy of a ten or eleven year old. There is a reception room and a secretary who acts as receptionist. The writer was given a full-scale conducted tour of the kitchen, play rooms, bath rooms (situated between the bedrooms with tubs and commodes alike just large enough to accommodate the smallest patient). Bedrooms had beds to fit all ages, and the children's names were on each door, arranged in novel fashion. A dental chair just high enough for the smallest child to step into was the highlight of the laboratory. The dining hall was set up with tables and chairs cut to fit all ages from smallest to tallest. The activity room with its equipment and toys was most interesting. It was here that the re-evaluation clinic was in progress. All services are under "one roof" and outside services are brought in.

Treatment Program

There are many types of activities going at once, and the center is a beehive of activity. In one room a boy about eleven practices his typing with his toes on a specially adapted typewriter. He is composing a letter to his parents. After a year of activity, all personnel and patients take two weeks vacation in June. All the patients are sent home and the staff, who ordinarily live on the grounds, leave also. This is felt to be the best method of giving continuous treatment for the balance of the year.

The constant systematic review is once again the key to the successful treatment program. The visiting staff is on call and review patients about once every three months unless notified of some interim problem. There is a plan here for training personnel. All therapists wear ordinary clothes to simulate the home environment. Parents are urged to come and take part whenever possible so that they, too, may become trained in handling their children.

To terminate this phase of the paper the writer urges anyone who is interested in seeing an extremely worthwhile program, and one with unusual appeal, to visit the Walter D. Matheny School.

SUMMARY

There are an extensive number and a variety of clinics existing at the present time; however, those recognized as rehabilitation centers have, or are moving in the direction of having, as many essential services as possible under "one roof," plus having access to pre-and post-rehabilitation and medical services as well. These services must function until the patient is placed within his maximum potential, either in a home or on a job. It is noted that restoration clinics or centers are not considered total or rehabilitation centers since they deal mainly with medically prescribed activity and do not usually include social, psychological or vocational services. One point that is common among rehabilitation centers is that the centers must meet a confirmed need for many types of patients and that medical direction is essential. Medical direction, under the same roof as all other services, is a necessity to meet the requirements for a well equipped, well staffed rehabilitation center. In addition a consistent re-evaluation of services, a research program, and a training program for rehabilitation personnel are felt to be essentials to make the center an effective instrument in the expanding and dynamic field of physical medicine and rehabilitation.

Acknowledgements

The author wishes to express his appreciation for the assistance, direction and encouragement given by Dr. Joseph B. Bounds, Manager, Veterans Administration Hospital, Roanoke, Virginia, and Dr. Gordon Warner, Department of Education and Psychology, Long Beach State College, Long Beach, California.

The Association for Physical and Mental Rehabilitation

Wishes Its Advertisers, Members and Friends

A VERY MERRY CHRISTMAS

and a

HAPPY NEW YEAR

ADAPTING THE AMERICAN RED CROSS SWIMMING COURSES FOR USE IN AN NP CORRECTIVE THERAPY PROGRAM

RICHARD L. COMSTOCK, C.C.T.*

LOUIS J. FISHBONE, C.M.R.C., C.C.T.**

Over a period of time we have found that the courses offered by the American Red Cross on swimming instruction are an effective means of structuring our therapeutic swimming activity to meet the needs of neuropsychiatric patients.

We operate a corrective therapy swimming pool program in a 1176 bed neuropsychiatric hospital, and we have noted that it is more advantageous to treat our patients in a group situation. This method provides maximum coverage of patients amenable to treatment in this modality, and in addition provides the group identification needed to motivate some of our more seclusive patients into constructive activity.

Usually when water is mentioned in a patient treatment program, it is thought of only for its sedative effects. Actually it provides a media for movement and expression of movement by the patient in a so-called sedative atmosphere.

Our average daily patient load at the pool is 160 to 110 patients. Approximately 60% of these are on locked ward status. A small percentage of the balance consists of GM&S patients and privilege patients. Since most of the patients treated at the pool are diagnosed as schizophrenics, they seem to fall into a mixture of three types of physical movement: the hypokinetic, hyperkinetic, and parakinetic. In this respect, the American Red Cross basic swimming courses provide all the different types of hydrogymnastics needed to work with these groups in the water. All of the courses are geared for the group approach and yet afford the necessary individualized attention which these patients need. There are rhythmical simple movements for the hypokinetic; movements that require endurance and aggressiveness for the hyperactive; and a structure of movement for the parakinetic. Where some type of reward is advisable, there are Red Cross swimming achievement cards which can be

issued by the instructor to provide the necessary incentive.

We have had one such group finish a beginners swimming course. At the start of the course we had "just so many swimmers." They did not react socially to one another in a group or individually. Moreover, we had a problem at first of promoting sufficient stimulation for the better swimmers who needed the therapeutic benefits of group activity. This we found was not too complex a problem to solve. By encouraging the better swimmers to perfect their basic swimming fundamentals—something that most swimmers lack who have never had instruction—we noted a definite increase in participation and interest, and a general desire in them to develop their swimming proficiencies. As the course progressed, we also saw patients engaging in activity with one another and in small groups during the free swimming period when they first entered the pool. Apparently the favorable effects of the patients working toward the same objective brought about an interplay of personal relationships creating a group identity and stimulating sufficient group pressure to motivate some of the more seclusive individuals into active participation.

At the completion of the Red Cross course, only two out of 16 patients did not pass the test requirements for a Red Cross achievement card, but even these learned to swim well enough to take part in various other water activities. All had gained the full benefits of the corrective therapy swimming program and were able to react spontaneously to each other. They could enter the water and engage in activity usefully with each other without any difficulty. Through the medium of the Red Cross achievement cards, 14 patients now had tangible proof that they had not lost their learning ability. We hope that the recognition and self-satisfaction that these long term mentally ill patients received in attaining this swimming accomplishment may provide the needed psychological spark in helping to spur them on toward realistic rehabilitation goals in other aspects of the physical medicine and rehabilitation program.

*Corrective Therapist, VA Hospital, Tomah, Wisconsin; Commissioner of First Aid and Water Safety, Tomah Chapter, American Red Cross.

**Coordinator, Physical Medicine and Rehabilitation Service, VA Hospital, Tomah, Wisconsin.

"From Other Journals"

J. JOSEPH and P. L. WILLIAMS, "Electromyography of Certain Hip Muscles." *Journal of Anatomy*, 91:286-294, April, 1957.

Investigations into symmetrical easy standing have led to divergent opinions regarding the relation of the thigh to the pelvis at the hip joints and the role of the hip musculature. The function of the iliopsoas, gluteus medius and minimus, and gluteus maximus were investigated by EMG techniques. In 18 subjects no potentials were found in the gluteus maximus, medius and minimus during easy standing. In 13 of them no potentials were recorded from the iliopsoas. When the remaining five were asked to relax their abdominals, their iliopsoas potentials disappeared. During forward arm raising large potentials were recorded from the hamstrings. The gluteus maximus showed no evidence of electric activity. A similar picture was found during forward swaying from the ankle points. During toe touching with the knees straight, large potentials were recorded from the hamstrings almost immediately the movement commenced. There was no demonstrable activity in the gluteus maximus until the final stage of the downward phase, when large potentials were recorded. These persisted throughout the upward stage and finally disappeared a little before the standing at ease position was again reached. Evidently straightening up after toe touching the toes requires powerful extensor activity, and simultaneous contraction of the gluteus maximus and hamstrings occurs.

J. M. BISHOP, K. W. DONALD, S. H. TAYLOR and P. N. WORMALD, "The Blood Flow in the Human Arm During Supine Leg Exercise." *Journal of Physiology*, 137:294-308, 11 July 1957.

It is commonly taught that the redistribution of blood flow which occurs during leg exercises involves a reduction of blood flow to resting regions of the body. The purpose of this investigation was to determine changes in the blood flow to the whole arm during leg exercise. Studies of oxygen saturation of axillary venous blood suggest that there is a reduction of total arm blood flow during the early part of exercise, that later the blood flow increases, and after exercise is frequently greater than the resting blood flow. Studies of radioactive sodium clearance provided no definite evidence that the muscle blood flow was altered during exercise, but further information is required on this point. Hand calorimetry generally showed a reduction of hand blood flow during the early part of exercise. Later in exercise and during early recovery the hand blood flow increased to several times that at rest. In patients with impaired cardiac output reduction of arm blood flow as the initial response to leg exercise is both marked and sustained. In patients with low and unchanging cardiac outputs increased arm blood flow did not occur late in exercise. Such circulatory economy may occasionally occur in normal subjects and studies of body temperature and skin circulation of athletes during very violent exercise would be of interest.

WALLACE O. FENN, "The Mechanics of Standing on the Toes." *American Journal of Physical Medicine*, 36:153-155, June, 1957.

The ankle has been regarded both as a lever of the first class with the fulcrum at the talocrural joint and as a lever of the second class with the fulcrum at the metatarsophalangeal joint. Either interpretation is correct provided all the forces involved are included. In such a system in static equilibrium the sum of the clockwise forces must equal the sum of the counterclockwise forces and the discussion of the type of lever involved is beside the point.

EDWARD J. VAN LIERE, "Space Medicine." *The West Virginia Medical Journal*, 53:297-301, August, 1957.

By the year 2000 flights to the moon should be possible. It is stimulating to speculate on the types of illness or injuries the physician will be required to treat. It is reasonable to suppose that some of the patients will suffer from hypoxia and may show dilatation of the heart, after effects of sudden decompression, fractures, thermal burns, ultraviolet radiation, cosmic radiation, weightlessness, acceleration and accidents due to meteors. Emotional strain and physical and mental fatigue may cause severe mental trauma. There will always be brave men who will take such risks even though they know the chances of returning alive are small.

PAUL D. WHITE, "The Role of Exercise in the Aging." *Journal of the American Medical Association*, 165:70-71, September 7, 1957.

At any age physical exercise has certain beneficial effects. The kind of exercise is not very important, except that it should suit the strength, aptitude and liking of the particular person. There are several values derived from exercise: (1) Good muscular tone improves the circulation of the blood. (2) An antidote for nervous tensions is furnished. (3) Digestion is improved. (4) Aid is furnished in controlling obesity. (5) Function of the lungs and the state of lung tissue is improved. Slight to moderate exercise should be prescribed for heart disease patients, except for the most severe cases. Exercise plays a useful role in the maintenance of both the physical and mental health of the aging, but each person requires individual appraisal.

KARL MENNINGER, "Psychological Factors in the Choice of Medicine as a Profession." *Bulletin of the Menninger Clinic*, 21:51-58, March, 1957 and 21:99-106, May, 1957.

Choice of preferred life work is largely a result of unconscious motivation. Choice of a medical career may result from identification with a parent or family physician, symbolic restitution for early hostility, or curiosity about the female body. A pediatrician enacts a maternal role and may be repeating ministrations received from his mother during childhood illnesses. An obstetrician may be gratifying his infantile wish to become a mother. The urge to relieve maternal pain by the use of anesthetics may be due to identification with the patient. Urologists appear to believe that the penis is the most important organ of the body, which is what every child believes at the so-called phallic period of his development. Proctology is obviously connected with the anal phase of development. Surgery affords a unique opportunity to conceal sadism, but surgeons probably have less unconscious guilt about their sadistic proclivities and can use them constructively rather than repress them. The reasons dermatology is elected as a specialty are unknown. Psychiatrists have at some time suffered overmuch from a sense of loneliness and rejection. In a sense they heal themselves by administering to lonely and eccentric patients.

WILLIAM C. STAHL, "March Hemoglobinuria." *Journal of the American Medical Association*, 164:1458-1460, July 27, 1957.

March hemoglobinuria has been defined as "a condition in which physical exertion gives rise to the passage of a red urine containing hemoglobin in solution." This condition has been seen in college students who have performed an excessive number of deep knee bends or pushups as part of a fraternity initiation, in competition between students, or in an effort to get into shape quickly. The mechanism of hemoglobinuria is unknown, but it is believed that extreme exercise causes a breakdown of the muscle fibers so that myohemoglobin is released into the blood plasma and then excreted through the kidneys. Coffee colored urine appeared 24-48 hours after the exercise and cleared up within 48-72 hours after onset. Treatment consisted of rest, administration of aspirin and prohibition of additional exercise.

Editorials

A PERSPECTIVE FOR PROFESSIONAL GROWTH

In measurement of years, corrective therapy has advanced from birth through adolescence to manhood. With a decade of experience behind it, this member of the newer companion family is in the crucial and pivotal position of historical development where it can chart its own course for the future. In this situation, we should be mindful of the admonition, "Those who are inclined to forget lessons of history must prepare themselves for its repetition."

Alan Gregg, a devoted friend to the spirit and discipline of corrective therapy, once said that the profession in order to perpetuate the enthusiasm of youth into its adult development must gain a mature perspective, not only of the growing needs of the services to which it has addressed its efforts, but also of its personal needs for new motivations to work hard in the acceptance of a challenge to produce a dynamic professional organization.

In current efforts being made continually to activate and develop professional relationships with various bodies of medicine and therapy we, as members of our organization, are apt to lose this perspective for growth. One of the easiest ways to lose this perspective is to confuse the body with the spirit of our discipline. Corrective therapy can be realistically visualized as an organ with a body and soul. The soul of our discipline inheres in the clinical skill of the therapists rather than its administrative form.

One cannot over-estimate the importance of this clinical skill as the foundation for professional growth. The development of this aspect is, in the opinion of your president, the most promising area for the intensive professionalization of our discipline. While much has been said, and rightfully so, about the basic

changes in the philosophy of corrective therapy, particularly the improvement of its administrative structure and area also recognized to be desirable, this is simply the machinery for the development of technical yet social and humane skills. The most promising challenge for the therapist is to work with his interpersonal tools closely with the directing physician in meeting the many subtle needs of the patient for both treatment and rehabilitation.

While as a profession, we are naturally concerned for the administrative progress of our specialty, we will benefit most by this long-range perspective for growth—a perspective which will enable us to recognize in the interminable forest of complicating and competing systems and ideologies, the golden resources of rich clinical experience. Out of this experience we as therapists will be enabled to improve our unique and distinctive contribution to the patient and attain, in this most acceptable manner, the professional growth and recognition which we share as a paramount aim of all the paramedical disciplines.

The corrective therapist has the most extensive clinical resources available anywhere. The opportunity for study and research in this area is unlimited. Our professional future is dependent upon our initiative in the utilization and development of this unparalleled opportunity. Many corrective therapists have made significant and pioneer contributions to activity—therapy skills in the treatment of the general, medical surgical, neurological, psychiatric and tuberculosis patients. Let us accelerate our progress in this direction and take advantage of an opportunity which may not come again in a crucial point in the professional development of our discipline.

John Eisele Davis, Sc. D.

President, APMR

FREDERICK STENN, "The Caduceus and The Staff of Aesculpius." *What's New*, No. 201, Fall, 1957.

The caduceus and the Aesculapian staff have emerged from serpent worship. The rod present in both has been regarded as a wand, a walking stick, a shepherd's crook, a branch or a phallic symbol. Mercury is said to have separated with his wand two fighting serpents; thereafter the wand became the badge of neutrality. One of the serpents on the caduceus is male, the other female. This may be because Mercury also presided over the act of coition. The caduceus was not regarded as a medical emblem until Sir William Butts, physician to Henry VIII, adopted it as his crest. Aesculapius was a physician of Thessaly whose sons are mentioned by Homer and whose daughters included Hygieia and Panacea. While attending Glaucus, he killed a serpent with his staff. A second serpent brought an herb which revived the dead snake; Aesculapius used the same herb to revive Glaucus. In 1912 the American Medical Association adopted the Aesculapian staff as its symbol.

H. B. LEE, "Avulsion and Rupture of the Tendo-Calcaneus After Injection of Hydrocortisone." *British Medical Journal*, No. 5041:395, August 17, 1957.

Chronic pain and swelling in the tendo calcaneus are common in long-distance runners, who usually recover in a few months whether they continue to run or not. Pain about the insertion is much less common and is usually ascribed to calcaneal bursitis. It is aggravated by running and forces the runner to stop. In a cross country runner suffering from pain about the insertion of the tendo calcaneus injection of hydrocortisone acetate (25 mg in suspension in 1 ml.) was followed by some relief of pain. While running after the third injection, the tendon tore. Experimental evidence of the effects of hydrocortisone on tendon healing is conflicting, but apparently avulsion of the tendon had been going on for some time and the hydrocortisone may have hindered simultaneous repair.

Book Reviews

"Surgeons All," by Harvey Graham. (New York: Philosophical Library, 1957. 443 pp. \$10.00)

"Since the last glacier retreated, man has had to fight for health, and the first weapon in the hands of the first surgeon was a flint." Beginning with a description of the dawn of surgery, Graham relates the history of the practice of surgery from the primitive efforts of trepanning to "release demons" to modern times. In the first half of his book the author describes various periods in surgical history—the Greek and Roman periods, surgery in eclipse, its renaissance, and its progress from the 17th Century to modern times. Graham describes how the surgeon evolved from the status of a barber to that of a gentleman who associated with kings and other outstanding personalities of the day. The latter part of the book demonstrates how surgery grew by the constant struggle between superstition and science as seen in "the struggle for corpses," introduction of antiseptics and anesthesia, and the development of new techniques. The book closes with a glimpse into the future of surgical practice.

This volume should prove excellent reading for medical students or anyone interested in the general history of medicine.

—MLB

"Teach Yourself to Relax," by Josephine L. Rathbone. (Englewood Cliffs: Prentice-Hall, Inc., 1957. 206 pp. \$4.95)

Probably most people would agree that many of their difficulties result from the fact that they are tense and unable to relax. Rathbone in scholarly fashion, but in simple, clear language, first defines the problem in terms of recognition and etiology of fatigue and tension. Physical and psychological causes, and reasons why tension occurs in some individuals but not in others are described. Her discussion points up the necessity for the reader making a decision: Is the competitive struggle in which I am engaged worth the fatigue and miserable feelings that it causes?

The second part of the book deals with specific methods and techniques of physical relaxation, to enable the reader to "learn how to relax consciously." Exercises designed to release neuromuscular tensions in local areas of the body—the arms, legs, trunk and face—are presented and discussed in detail. Yoga exercises are also briefly included. Psychological aids to relaxation and the value of play, as well as spiritual meditation, are woven into the outline. The book is a simple yet excellent aid for anyone needing assistance (and who does not?) in learning how to relax.

—MLB

"The Mentally Ill Child," by Steven B. Getz and Elizabeth Lodge. (Springfield: Charles C. Thomas Publisher, 1957. 88 pp. \$3.50)

This volume was written as a guide for parents of mentally ill children. It serves its purpose of informing, guiding towards a solution to the many problems, and supporting parents in their endeavors. It tries to point out the common misconceptions and the real problems and responsibilities of the parents. Recognition of symptoms, diagnosis, and consultation are discussed. The authors present the various schools of thought concerning cause and treatment of mental illnesses and provide an example through a typical case history. Parental attitudes are described in regard to the child at home, in the hospital setting, and under foster care. The final chapter is devoted to the recently-organized League for Emotionally Disturbed Children, describing its organization and purpose.

The book concludes with an extensive bibliography, not only for the purpose of covering the material referred

to in the text, but, as the authors write, "to point out to the parents the many different types of research which are directly or indirectly concerned with solving their children's problems."

—HJB

"Remotivating the Mental Patient," by Otto von Mering and Stanley H. King. (New York: Russell Sage Foundation, 1957. 216 pp. \$3.00)

This book is an excellent follow-up of the Russell Sage Foundation's earlier publication *From Custodial to Therapeutic Patient Care in Mental Hospitals*. Dr. von Mering, a social anthropologist, made extensive visits and studies in 30 mental hospitals throughout the United States—20 state hospitals, 3 Veterans Administration Hospitals, 4 joint university and state institutions, and 3 private sanitariums. Dr. King, a social psychologist, and von Mering collaborated in evaluating and writing up the survey and interviews of doctors, nurses, therapists, aides and patients. The result is an informative and interesting manuscript presented in a very descriptive terminology, such as "the Museum Ward," "the Moving Ward," the Family Ward, "Sitters," "Standers," "Pacers," "the Cigarette Bummer," "Sneaky Pete," "the Con Man," etc. Excellent case studies are presented to demonstrate techniques of patient-personnel relationships, improved social and environmental conditions, and how these affect the patient, especially the chronic patient, as a remotivating factor.

This book should be in the library of every mental institution and read by all personnel from the maintenance staff to the administrators.

—HJB

"Rehabilitation in England," (Text in German) (Stuttgart: Georg Thieme Verlag, 1957. In USA and Canada: International Medical Book Corp., New York 16, N.Y. 287 pp. \$8.60)

Preparatory to establishing a legislative and administrative program for its war and industrial casualties, the Department of Labor of the West German Republic sent several rehabilitation experts to England to study the rehabilitation program in that country. This volume is, in effect, a report of these authorities to German medical personnel and others interested in the progress in rehabilitation which has been made in England. The book describes in detail therapeutic programs for medical, surgical, neurological and psychiatric patients as practiced at various rehabilitation centers in England. Corrective Therapy (including swim therapy), physiotherapy, and work therapy, the bulwarks of the program at such centers as Garston Manor at Watford, are extensively discussed. The German experts emphasized the total rehabilitation process which they discovered at the core of the English program; the inseparability of medical, social and vocational rehabilitation.

In the last chapter of the book the authors report on rehabilitation of the blind as discussed at a European Seminar for the Rehabilitation of the Blind organized with the cooperation of the World Council for the Care of the Blind and the World Veterans Association.

—RK

"Wrestling Instructor's Guide," (Chicago: The Athletic Institute. 1956. 80 pp. \$1.75. Paper.)

There are a number of books on wrestling, but this is the first publication the writer has seen designed specifically for the use of the coach in instructing a group of beginning wrestlers. It was prepared for use with a sound slidefilm kit also available from The Athletic Institute, but is so written that it can be utilized by itself. The text is divided into five units: Introduction, Takedowns, Breakdowns and Rides, Pinning Combinations, and Escapes and Reverses. In general, it consists of pictures and text describing offensive maneuvers, each followed by a similar series depicting a counter. Thus at the completion of these units (with, of course, the necessary practice) the novice is soundly grounded in the fundamental moves in each of the principal phases of wrestling. The reviewer is very favorably

impressed with the potential value of the material in dealing with large classes, where it is difficult to present demonstrations in such a way that all may see what is being done. The neophyte coach, who is usually uncertain just what to teach and in what sequence to present it, will find this a very helpful guide. The text is profusely illustrated and the photography is in general excellent in quality and in clarity of maneuver depicted. The consultants, Rex Peery and Arnold Umbach, no doubt deserve the credit for the technical quality of the material, and the Athletic Institute is to be complimented for having made it available at such a moderate price.

—PJR

Awards

THE ASSOCIATION AWARDS SYSTEM

The main objective for this year's Awards Committee is to publish the awards system. In this way the entire membership may become familiar with the operational procedure for selection of candidates whom they wish to recognize for outstanding achievements. Since past issues of the *Journal* have covered various phases of the award system, this effort will be a complete summary of up-to-date information.

The deadline for submitting candidates' names for consideration is January 1 of each year. The names and the supporting statements should be sent to the following officials: The Area Awards Committee member, the president of the chapter of your association or the chairman of the Area Committee members.

Area #1 Sam Boruchov, 147-02 77th Road, Kew Garden Hills, New York.

Area #2 Chris Kopf, 2015 Birch Street, Scotch Plains, New Jersey.

Area #3 Willis Denny, V.A. Hospital, Dublin, Georgia.

Area #4 Because Mr. Leon Edman has changed locations, members are urged to send their nominations directly to the national Awards Committee Chairman.

Area #5 John Arena, V.A. Hospital, Houston, Texas.

Area #6 Rudolph Jahn, 5371 Anaheim Road, Long Beach, California.

Chairman of Awards George V. Devins, 3015 Willow Road, N.W., Roanoke, Virginia.

Supporting material for nominees should be prepared and presented on one sheet of bond paper. This may be single or double spaced but *must not* exceed one typewritten page.

Prior to preparing the material, it will help to survey the types of awards to determine if the candidate in mind is eligible for the award for which he is being recommended. Often a candidate's name is received by the committee, and it is discovered that he is not eligible for the suggested award. Another common error is sending in the name with the statement, "If this candidate is acceptable, I will prepare supporting evidence." The committee urges that all names be forwarded *with* supporting material; otherwise the candidate's name will not be considered.

Awards and Method of Selection

Awards included in the system are: (1) The John E. Davis Award, (2) The Achievement Award in Rehabilitation, (3) The Annual Corrective Therapy Award, (4) Past Presidents Award, (5) Fellow Award, (6) Life Membership and (7) Honorary Membership. The Awards Committee rates all candidates for the John E. Davis Award, the Achievement Award in Rehabilitation and the Annual Corrective Therapy Award by filling out a carefully planned rating scale. The support material sent in with the candidate's name is used as a basis for the rating. The two candidates with the highest scores are then sent on ballots to be voted upon by the Board of Governors. The one gain-

ing the highest number of votes is winner. The Past Presidents Award is automatically presented for services rendered during the year. Life and Honorary Membership and Fellow Awards are all presented for vote by the Board of Governors. A two-thirds majority vote is necessary to approve these awards.

How to Prepare Material on Candidates and Criteria for Selection

(1) Include the name in full with the candidate's present address.

(2) Write a concise statement about the candidate's contribution and achievement in the specific area in which the award is given. It was previously recommended that this be limited to one side of a typewritten page.

Since the John E. Davis Award is given in the field of Physical Medicine and/or Rehabilitation, the statement should include information about the candidate under the following headings: (1) Leadership; (2) Research and Clinical Practice; (3) Philosophy and Devotion to the total field; (4) Publications; and (5) Other.

The Achievement Award in Rehabilitation being presented to the person who has contributed most to his own rehabilitation and thus giving inspiration to all, should include statements under the following headings: (1) Nature, cause and circumstances surrounding the incident of disability; (2) Obstacles overcome; (3) Accomplishments since onset; and (4) Inspirational value—effect on others.

Since the Annual Corrective Therapy Award is presented for outstanding achievement in the field of corrective therapy, the following headings have been suggested for presenting material: (1) Clinical Program; (2) Original Research; (3) Advancement of Corrective Therapy through (a) leadership, (b) publication, (c) organization and administration, (d) association and (e) other; (4) Interpersonal relationships; and (5) Other. Examples might include items such as personal appearance, professional bearing and prestige, personal sacrifice, public relations work, development of equipment or ideas, etc.

Now that the Fellow Award has been removed from the membership category, it will be necessary to have statements comparable to the other awards. Under the following headings material on scholarly achievement will be presented: (1) Description of Contribution; (2) Effect in the field; (3) Scope of project or work; and (4) Other comments.

Although Life and Honorary Memberships and the Fellow Award are not considered competitive and are voted upon by the Board of Governors, requiring a two-thirds vote of approval, it is still necessary that a statement be presented with the candidate's name.

Award Winners 1951-57

The John E. Davis Award was initiated at the 1951 convention in Los Angeles; it was voted to Dr. Davis and presented to him in Milwaukee in 1952. Winners since then have been:

1953—Dr. A. B. C. Knudson
1954—Dr. Edward Greenwood
1955—Dr. Karl Menninger
1956—Dr. Louis B. Newman
1957—Dr. Fritz Friedland

The Achievement Award in Rehabilitation was voted into the award system at the Cleveland convention in 1954. The first award was presented to **Russell Williams**, Director of the Blind Program at VA Hospital, Hines, Ill. in 1955. Winners since then have been:

1956—Melvin J. Maas, Maj. Gen., USMC, Ret.
1957—Peter Volpe, M.D.

The Annual Corrective Therapy Award also was voted into the award system in 1954. **Louis F. Mantovano** received the first award in 1955 and winners since then have been: 1956—Frank S. Deyoe, Jr.
1957—Edward D. Friedman

Since 1956, the current president of the association is ineligible to receive the above award.

The Past Presidents Award was approved in 1954 retroactive to 1946 when the association was organized. Those who have received this award are:

Chris Kopf (1946-47)
 Jack E. Jones (1947-48)
 Sam Boruchov (1948-49)
 Raymond W. Swanson (1949-50)
 George V. Devins (1950-51)
 Leo Berner (1951-52)
 Thomas J. Fleming (1952-53)
 Harold M. Robinson (1953-54)
 Louis F. Mantovano (1954-55)
 Frank S. Deyoe, Jr. (1955-56)
 Arthur Landy (1956-57)

The Fellow Award came into being as a result of action at the 1953 convention. The first award was made in 1956 to Philip J. Rasch, Ph.D. and last year's winner was Karl K. Klein.

Honorary Memberships have been presented to the following:

1953—George M. Reichle
 1954—Alan Gregg, M.D.
 1956—Justin Johnson
 Ferdinand Schwartz, M.D.
 1957—Harvey J. Tompkins, M.D.

Only two Life Memberships have been presented to date: To Dr. John E. Davis in 1951 and to Everett M. Sanders in 1954. Editor Emeritus is a special honor voted to Mr. Sanders on his retirement in 1954.

Sustaining memberships are not usually voted but are given automatically when funds are contributed to the association over and beyond the membership fee. Miss Dorothy Brandes received sustaining membership in 1951, and sustaining memberships were presented to the Allis Chalmers Co. and the Allen Bradley Co. of Milwaukee for their contributions to the success of the 1952 convention.

GEORGE V. DEVINS
 Chairman, Awards Committee

Chapter Activities

Several Chapters held elections during the Fall months in conjunction with their regular meetings and clinical sessions. A current list of chapter officers follows:

New England Chapter

Pres.—Joseph Colello, C.T. Sec., VAH, Brockton, Mass.
 Vice-Pres.—Charles Bader, Linwood Ave., Augusta, Maine
 Sec.-Treas.—Arnold Arsenaault, C.T. Sec., VAH, Brockton, Mass.

Eastern States Chapter

Pres.—John Baldino, 2120 E. Tremont Ave., Bronx 62, N.Y.
 Vice-Pres.—Luther Thomas, 336 S. Sixth St., Mount Vernon, N.Y.
 Donald Kardok, 67-54 223rd Place, Bayside, L.I., N.Y.
 Sec.-Treas.—Frank Chilletti, 200 Court St., Binghamton, N.Y.

Western New York Chapter

Pres.—Paul E. Daniels, Jr., 168 Buffalo St., Canandaigua, N.Y.
 Vice-Pres.—Ambrose LaVigne, 111 Lynnhaven Dr., N. Syracuse, N.Y.
 Sec.-Treas.—Louis Guignard, VAH, Canandaigua, N.Y.

Middle Atlantic Chapter

Pres.—Samuel Burchart, 1311 Bangle Road, Richmond, Va.
 Vice-Pres.—Gerald LeHoux, 29 Border Rock Rd., Levittown, Pa.
 Sec.-Treas.—George Jones, 6205 Glyndon Lane, Richmond 25, Va.

Southeastern Chapter

Pres.—Robert E. McIntire, C.T. Sec., VAH, Salisbury, N.C.
 Vice-Pres.—William Redden, 1426 W. Duval, Lake City, Fla.
 William Manross, 709 Stewart Ave., Dublin, Ga.
 Sec.-Treas.—Paul Beck, 2860 Cornelia Rd., Augusta, Ga.

Texas-Louisiana Chapter

Pres.—Julian Vogel, Chief, C.T., VAH, Waco, Texas
 Vice-Pres.—Karl Klein, 1500 E. 34 St., Austin 2, Texas
 Sec.-Treas.—Wilburn Curnutt, 1418 Conally St., Waco, Texas

Ohio-Kentucky Chapter

Pres.—Charles Hayes, VA Hospital, Lexington, Ky.
 Sec.-Treas.—Mark Howett, C.T. Sec., VAC, Dayton, Ohio

Grand Canyon Chapter

Pres.—Harry White, 1035 Crandall Ave., Salt Lake City
 Vice-Pres.—Harlan Wood, 1786 Laurelhurst Ave., Salt Lake City
 Sec.-Treas.—Bruce Goodrich, 1209 So. 7th E., Salt Lake City

California Chapter

Pres.—Fred O'Banion, 6624 Peach Ave., Van Nuys
 Vice-Pres.—Richard Fowler, 3588 Tilden Ave., Los Angeles.
 Francis Dolan, 857 York St., Oakland 10
 Sec.—Thomas Meyer, 7329 White Oak Ave., Reseda
 Treas.—Thomas Brown, 13916 Homeward St., La Puente

Heart of America Chapter

Pres.—Walter Mullens, 1205 Watson, Topeka, Kans.
 Vice-Pres.—Clyde Coulson, 619 S. Green St., Wichita, Kans.
 Sec.-Treas.—Donald Whitman, 5530 W. 15th St., Topeka, Kans.

Midwest Chapter

Pres.—Carl Purcell, 2212 S. 9th Ave., Broadview, Ill.
 Vice-Pres.—John Sikich, 14010 Greenbay Ave., Burhan 33, Ill.
 Sec.-Treas.—Melvin Sader, 1176 So. Grove Ave., Oak Park, Ill.

Northwestern Chapter

Pres.—Walter Walkord, 3435 N. E. Fremont, Portland, Ore.
 Vice-Pres.—Everett Converse, Rt. 4, Box 76, Sherwood, Ore.
 Sec.-Treas.—Paul Hedman, 3435 N. E. Fremont, Portland, Ore.

All chapter presidents have been notified of the number of Representative Assembly members to be elected by the respective chapters. The representatives will take office on January 1, 1958. Those elected to date include:

Texas-Louisiana Chapter—Julian Vogel
 Heart of America Chapter—James W. Watkins
 Ohio-Kentucky Chapter—James Strausbaugh

Other chapters are in the process of holding their elections but because of copy deadlines will not be listed until the next issue of the *Journal*. All chapters have now filed the information requested by the Chapters Committee. The committee is redefining geographical areas and expects to announce jurisdictional boundaries in the near future. As noted previously these areas will include all members, can be adjusted and changed as necessary or as indicated by the formation of new chapters. —FSD

Ohio-Kentucky Chapter

The Ohio-Kentucky Chapter held its fall meeting in conjunction with the Ohio Valley and Tri-State Chapters of the Am. Assoc. of Rehabilitation Therapists on October 4 and 5 at Crile Veterans Administration Hospital in Cleveland.

The first day of the meeting included a welcoming address by George Hiskey, Manager of Crile VAH and a very interesting discussion on the subject of "Creative Thinking" presented by William Uranik, Director of Salaried Personnel of the Ford Motor Company, Cleveland. Business meetings of the respective chapters concluded the afternoon.

On October 5, the morning session was devoted to clinical topics including papers on "Gaits Due to Weakness" presented by Dr. Charles Long of the PM&R Service, Highland View Hospital, Cleveland; "Corrective Therapy Program for Hospital Diabetic Patients" by Mark Ullman, GM&S Unit Supervisor for CT at Crile; and "Ward Government with Psychotic Patients" by Joseph Rubel, Psychiatric Unit Supervisor for CT at Crile. After the morning session, Dr. John E. Davis, president of APMR, gave members of the association a brief orientation on national developments in the organization. —MWH

Subject Index-Volume XI

The first Table of Contents for the JOURNAL appeared in Vol. 4, No. 9. An annual Subject-Author Index was published in Vol. 5, No. 6, and it has appeared in No. 6 of each succeeding volume.

ABSTRACTS

- A -

Athletics

- Athletics, A Physician Looks at (Novich, N.M.) 1:24, Jan.
Olympic Award 4:131, July.
Olympic Games 2:63, March.
Olympic Games, Medical Arrangements at 2:63, March.
Runners, Long Distance, Two Deaths in (Robbins, C.A.) 1:24, Jan.
Sport Injuries 4:131, July.

- C -

Cardiac

- Health Habits and Heart Disease—Challenge in Preventive Medicine (Luongo, E.P.) 2:63, March.
Nylon Heart Function Test, Variations in Response of Normal Persons and Cardiac Patients to (Sutton, G.C., Swisher, W.P., & Sutton, D.C.) 4:132, July.

- E -

Ecology

- Ecology, Human, Brief for Investigation of (Hinkle, L.E. & Wolff, H.G.) 4:131, July.

Exercise

- Exercise, Brief Maximal, Effect of on Strength of Quadriceps Femoris (Rose, D.L., Rodzinski, S.F. & Beatty, R.R.) 4:131, July.
Exercise, Role of in the Aging (White, P.D.) 6:202, Nov.
Graded Exercises, Influence of on the Oxygen Consumption, Pulmonary Ventilation, and Heart Rate of Young and Elderly Men (Durnin, J.V.G.A. & Mikulicic, V.) 2:62, March.
Human, The Hypertrophied (Dawson, G.R.) 4:131, July.
March Hemoglobinuria (Stahl, W.C.) 6:202, Nov.

- F -

Foot

- Foot, The Painful (Drew, J.F.) 4:130, July.
Hallux Valgus (Day, F.G.) 4:130, July.
Shoes, Influence of on Deportment and Gait (Clemmesen, S.M.) 3:101, May.

- I -

Injury

- Avulsion and Rupture of the Tendo-Calcanes After Injection of Hydrocortisone (Lee, H.B.) 6:203, Nov.
Fatigue Infraction of the Middle of the Tibia in Ballet Dancers (Burrows, H.J.) 1:23, Jan.
Injuries of College Football Players, Some Guiding Principles in Handling (Rachun, A.) 4:130, July.

- M -

Medicine

- Ataractics in Medical Practice (Fazekas, J.F., Shea, J.G. & Sullivan, P.D.) 4:102, May.
Caduceus and the Staff of Aesculapius (Stenn, F.) 6:203, Nov.

- Catching Cold from Showers After Exercise 4:132, July.

- Cold, Common, Blood Ascorbic Acid Level in Biflavonoid and Ascorbic Acid Therapy in (Franz, W.L., Sands, G.W. & Hoyle, H.L.) 3:101 May.

- Epidermis, Separation of, From Dermis by Filtrates of Tricophyton Mentagrophyte (Cruikshank, C.D. & Trotter, M.D.) 2:63, March.

- Medicine as a Profession, Psychological Factors in the choice of (Menninger, K.) 6:202, Nov.

- Mystery of the Red Tide 5:167, Sept.

- Sodium Bicarbonate, Acute and Chronic Intoxication Due to (Melrose, A.G.) 5:167, Sept.

- Somatotropin, Effect of on Cells in Tissue Culture (Moon, H.D. & St. Vincent, L.) 4:131, July.

- Space Medicine (Van Liere, G. J.) 6:202, Nov.

Measurement

- Fat, Proportion of, Estimation of, in the Body by Measurement of Skin-Fold Thickness (Edwards, D.A.W.) 2:62, March.

- Fat Weight and Fat Placement in the Female (Garn, S.M.) 4:132, July.

- Growth Spectrum, a Simplified Chart for Assessment of Growth (Naimark, G.M.) 5:166, Sept.

- Measurement, Fat, Selection of Body Sites for (Garn, S.M.) 4:132, July.

- Physical Types 5:167, Sept.

- N -

Nutrition

- Calories in Cola Drinks 2:62, March.
Nutrition, Optimal, a Concept of (Krehl, W.A.) 3:100, May.
Proteins, Dietary, Evaluation of (Alison, J.B.) 1:24, Jan.

- O -

Orthopedics

- Ankle Injuries, Treatment of (Cave, E. F.) 3:101, May.
Biceps Brachii, Replacement of by Pectoralis Minor Transplant (Spira, E.) 4:130, July.
Knees, Traumatized, of Rabbits, Experimental Use of Hydrocortisone in (Frankel, C.J., Webster, D.K. & Hamilton, T.M.) 4:131, July.
Shoulders, Dislocated, Self-Reduction of (Gage, E.L.) 3:100, May.

- P -

Physical Fitness

- Fitness of American Youth 3:100, May.
Physical Fitness and Cardiovascular Functions, Changes with Age (Simonson, E.) 4:130, July.

- Physical Fitness Index Studies (PFI) in Hospitalized Diabetic Patients (Zankel, H.) 4:132, July.

Physical Medicine

- Joint Disease, Chronic, Role of Physical Medicine in (Twombly, G. C.) 3:100, May.

- Physical Medicine and Modern Physics (Clemmeson, S.) 3:101, May.
Physical Medicine, Doctor Shortage in (Piersol, G.) 1:24, Jan.

Physiology

- Erythrocyte and Hemoglobin Studies of Thoroughbred Racing Horses (Brenon, H.C.) 2:63, March.
Fainting on Parade (Rivlin, S.) 4:131, July.

- Hip Muscles, Certain, Electromyography of (Joseph, J. & Williams, P.L.) 6:202, Nov.

- Mechanics of Standing on the Toes (Penn, W. O.) 6:202, Nov.

- Pain, Congenital Indifference to (Critchley, M.) 3:101, May.

- Shock: Advances in the Interpretation of Pathologic Physiology; Emergency Treatment (Bakaleinik, M.) 5:167, Sept.

- Valsalva Maneuver, The (Rose, J. C.) 5:166, Sept.

Physiology of Exercise

- Activity, Changes in Dimension of the Nuclei of Neutrons with (Chance, M.R., Lucas, A.J. & Waterhouse, J.A.H.) 1:24, Jan.

- Blood Flow in the Human Arm During Supine Leg Exercise (Bishop, J.M., Donald, K.W., Taylor, S. H. & Wormald, P.N.) 6:202, Nov.

- Exertion, Strenuous, Effect of on Women (Ryde, D.) 2:63, March.

- Endurance, World's Champion's Feats of, Biological Basis of E. Zatopek (Hornof, Z. & Kremer, M.) 3:101, May.

- Muscular Tone and Relaxation, New Views on (Basmajian, J.V.) 5:167, Sept.

- Overwork (Knowlton, G.C. & Bennett, R.L.) 2:63, March.

- Performance Capacity and Effects of Caloric Restriction With Hard Physical Work on Young Men (Taylor, H.L., Buskirk, E.R., Brozek, J., Anderson, J.T. & Rande, F.G.) 5:167, Sept.

- Physical Activity, Performance and Attitudes of a Group of Obese Women (Dorris, R.J. & Shinkard, A.J.) 5:166, Sept.

- Pseudonephritis, Athletic—Alteration of Urine Sediment by Athletic Competition (Gardner, K.D.) 2:63, March.

- Urinary Excretion of Noradrenaline and Adrenaline in Different Age Groups, Its Diurnal Variation and the Effect of Muscular Work on it (Karki, N.T.) 5:166, Sept.

- Urinary Findings Resulting From Non-traumatic Exercise (Alyea, E.P. & Boone, A.W.) 5:167, Sept.

Psychiatry

- Berserk, On Going: a Neurochemical Inquiry (Fabing, H.D.) 3:101, May.

- EEG, Consciousness and Sleep (Simon, C.W. & Emmons, W.H.) 2:63, March.

Psychiatry and the Science of Man (Braceland, F.J.) 5:167, Sept.

Psychology

Personality, Development of, Fate, Feeling and Fantasy in (Linden, M.E.) 1:24, Jan.

Psychosomatic

Monism and Psychosomatic Medicine (Cobb, S.) 5:166, Sept.

- T -

Tuberculosis

Bed Rest and Physical Activity, A Study Comparing the Effects of on Recovery from Tuberculosis Hirsch, J.G., Schaedler, R.W., Pierce, C.H. & Smith, I.M.) 4:130, July.

- U -

Ultrasound

Epicondylitis, Treatment of, Ultrasonic Radiation in (Aldes, J.) 1:24, Jan.

ARTICLES

- A -

Adapted Physical Education

Adapted Physical Education at the University of Oregon (Poley, M. S.) 3:81-84, May.

Adapted Physical Education for Men at the Pennsylvania State University (Gross, E.A. & Baer, E.E.) 3:88-90+, May.

Adapted Physical Education in the Weymouth (Mass.) Schools (Hayes, L.A.) 3:92-95+, May.

Individual Remedial Physical Education in the Philadelphia Public Schools (Brancato, J.N.) 3:85-87, May.

Ambulation

Standing Severely Disabled Patients, a Device For (Deyoe, F.) 5:159-160, Sept.

Amputee

Amputee, the Child (Farber, N.) 2:56-57+, March.

Below-Knee Amputees, Study of Balance of by Means of the Beam Walking Test (Graham, M.) 5:152-153+, Sept.

- C -

Cardiac

Cardiovascular Condition in Humans Nature of, Part I (Cureton, T.K.) 6:186, Nov.

Corrective Therapy

Corrective Therapy, Decade of Progress in (Van Schoick, J.) 5:154-158+, Sept.

Corrective Therapy, Human Relations in (Heaslet, R.B.) 1:17-20, Jan.

Corrective Therapy Program, Adapting the American Red Cross Swimming Courses for use in (Comstock, R.L. & Fishbune, L. J.) 6:201, Nov.

Neurotic and Psychotic, Treatment of by Corrective Therapy, an Approach to (Field, J.M.) 4:120-123+, July.

Pre-Therapists, Integrative Field Work Experiences for (Young, C. H.) 1:11-16+, Jan.

- D -

Dance

Social Dancing as a Therapeutic Medium with Long Term Neuropsychiatric Patients (Jurcisin, G.) 2:51-55, March.

Devices

A Device to Assist in Standing Severely Disabled Patients (Deyoe, F.S.) 5:159-60, Sept.

- E -

Education

Pre-Therapists, Integrative Field Work Experiences for (Young, C. H.) 1:11-16+, Jan.

Exercise

Do Mechanical Vibrators Take Off or Redistribute Fat (Hernlund, V. & Steinhaus, A.H.) 3:96, May.

Exercises to Promote Flexibility (McCloy, C.H.) 3:91, May.

Home Exercises for Convalescing Cardiac Patients, Part I (McCloy, C.H.) 6:181, Nov.

Muscular Strength, the Regulation of (Muller, E.A.) 2:41-47, March.

Pulmonary Exercise, Observations on the Value of (Wertz, S.H. & Schaffer, F.J.) 5:150-151, Sept.

Quadriceps Exercise, Application of Measurement to (Clarke, D.H.) 2:48-50, March.

- G -

Geriatrics

Normal Aging Adults, Physical Fitness Work With (Cureton, T.K.) 5:145-149+, Sept.

- H -

Health

Health, the Beginnings of (Gregg, A.) 4:124-129, July.

- P -

Physical Fitness

Exercises to Promote Flexibility (McCloy, C.H.) 3:91, May.

Physical Fitness Work With Normal Aging Adults (Cureton, T.K.) 5:145-149+, Sept.

Psychiatric

Neurotic and Psychotic Treatment of by Corrective Therapy, an Approach to (Field, J.M.) 4:120-123+, July.

Patients, Long Term, Social Dancing as a Therapeutic Medium With (Jurcisin, G.) 2:51-55, March.

Patients, Trends in Treatment with Tranquilizing Drugs (Brandt, H. A.) 2:58-62, March.

Schizophrenia, Treatment of, Assessment of Relaxation-Persuasion Method (Cuadra, C.A., Williams, M. & Gross, Z.) 4:113-119+, July.

Psychology

Patient and his Motivation (Brill, N.Q.) 1:5-10, Jan.

Rehabilitation

Rehabilitation Centers, Trends in (Devins, G.V.) 6:197, Nov.

BOOK REVIEWS

- A -

Aging, Neurologic and Psychiatric Aspects of the Disorders of 3:105, May.

Alcoholism (Thompson, G.N.) 1:28, Jan.

Anatomy and Physiology Integrated (Francis, C.C. & Farrell, G.L.) 5:169, Sept.

Artificial Limbs 1:26, Jan.

Artificial Limbs-Autumn, 1956, 3:105, May.

Athletic Competition on Girls and Women, AAU Study of Effect of 3:104, May.

Athletic Injuries (Thorndike, A.) 2:66, March.

- B -

Biosocial Nature of Man, the (Montagu, A.) 1:28, Jan.

Blood Pressure, Your, and How to Live With It (Brams, W.A.) 2:67, March.

Body Measurements and Human Nutrition (Brozek, J.) 2:66, March.

Boxers, Acute Head Injuries in (Larsson, L. E.) 1:26, Jan.

Boxing, Cerebral Lesions Caused by (Bergleiter, R. & Jokl, E.) 5:169, Sept.

- C -

Counseling in Medical Genetics (Reed, S.C.) 4:133, July.

- D -

Dance in Psychotherapy (Rosen, E.) 4:134, July.

Disability, Conquest of (Fraser, I.) 1:26, Jan.

- E -

Education and Human Motivation (Giles, H.) 3:105, May.

Emotional Problems, Management of in Medical Practice (Liebman, S.) 1:27, Jan.

Epilepsy, Grand Mal, Petit Mal, Convulsions (Fairfield, L.) 4:133, July.

- F -

Five Hundred Over Sixty (Kutner, B.) 2:66, March.

Foot Troubles (Stamm, T.T.) 5:170, Sept.

Football Fatalities, Twenty-fifty Annual Survey (Eastwood, F.R.) 4:134, July.

- H -

Health and Demography (Dunn, H. L.) 4:134, July.

Health Principles and Problems (Langton, C.V. & Anderson, C.L.) 5:170, Sept.

Heart, Straight to the (Lanton, C.) 2:65, March.

Human Types (Firth, R.) 4:133, July.

- I -

Ignoble Art, the (Summerskill, E.) 2:66, March.

Interviewing, Dynamics of (Kahn, R.L. & Cannell, C.F.) 5:170, Sept.

- J -

Judo, Modern and Self-Defense (Ewen, H.) 4:133, July.

- L -

Life and Mind (Sinnott, E.W.) 3:103, May.

- M -

Making the Years Count 2:65, March.

Mental Health Administration (Ewalt, J.R.) 3:104, May.

Mental Patient Reactivating the (VonMering, O. & King, S.H.) 6:204, Nov.

Mentally Ill Child, the (Getz, S.B. & Lodge, E.) 6:204, Nov.

Mentally Retarded Patient, the (Michael-Smith, H.) 1:27, Jan.

Migration and Mental Disease (Malzberg, B. & Lee, E.S.) 1:27, Jan.

Mind, The Rape of the (Meerloo, J. A.M.) 3:104, May.

Motor Vehicle Drivers With Brain Injuries, Physical and Mental Suitability of (Grossjohann, A.) 4:133, July.

Movement Fundamentals (Wessel, J.A.) 4:135, July.

My Minds and I (Crane, E.V.) 5:170, Sept.

- N -

Neurology, Clinical Examination in 2:67, March.

Nutrition and Diet Therapy (Proudfit, F.T. & Robinson, C.H.) 3:104, May.

Nutrition, Essentials of (Sherman, H.C. & Lanford, C.S.) 4:135, July.

- P -

Parliamentary Law and Protocol, Basic Principles of (Grumme, M.) 3:104, May.

Pathological Processes, Adaptations in (Welch, W.H.) 1:28, Jan.

Person Behind the Disease, the (Bauer, J.) 3:103, May.

Physical Conditioning 1:27, Jan.

Physical Education, Health and Recreation Congress, Proceedings of First Asian 3:103, May.

Physical Education in the Elementary School (Larson, L.A. & Hill, L.F.) 4:134, July.

Physical Education Literature, Index and Abstracts of (Mantoye, H. J.) 2:66, March.

Physical Education, Your Career in (Johnson, G.B., Johnson, W.R. & Humphrey, J.H.) 4:135, July.

Physiology, Medical (Bard, P.) 5:169, Sept.

Poliomyelitis, Physical Measures in the Treatment of (Reynolds, R. J.S.) 4:135, July.

Posture and Relaxation Training in Physiotherapy and Physical Education (Colson, J.H.C.) 1:26, Jan.

Power For You, Here's (Manners, P.) 2:67, March.

Prelude to Healing (MacMillan, W. J.) 2:67, March.

Psychiatric Education and Progress (Whitehorn, J.C.) 3:104, May.

Psychology—General-Industrial-Social (Frazer, J.M.) 1:28, Jan.

Psychotherapy of the Adolescent (Balser, B.H.) 5:169, Sept.

- R -

Recreation Program, the 2:65, March.

Rehabilitation in England. 6:204, Nov.

Rehabilitation, Professional (Boccolini, F.) 1:26, Jan.

Relax, Teach Yourself to (Rathbone, J.) 6:204, Nov.

Research in Health, an Inventory of Social and Economic (Strunk, F.R.) 2:67, March.

- S -

School Health and Health Education (Turner, C.E.) 4:133, July.

Silent Spokesman, the (Lessing, W. W.) 2:66, March.

Smoking, Science Looks at (Northrup, E.) 5:168, Sept.

Speech Pathology, Handbook of (Travis, L.E.) 5:168, Sept.

Speech, Rehabilitation of (West, R. Ansberry, M. & Carr, A.) 5:169, Sept.

Sports in the Cultural Pattern of the World (Jokl, E.) 2:65, March.

Sport Medicine (Karvonen, M. J.) 2:65, March.

Statistics, Medical, Principles of (Hill, A.B.) 2:65, March.

Stress of Life (Selye, H.) 3:103, May.

Suggestion and Hypnosis, Clinical Application of (Heron, W.) 5:170, Sept.

Surgeon All (Graham H.) 6:204, Nov.

- T -

Therapeutic Exercise for Body Alignment and Function (Williams, M. & Worthingham, C.) 4:134, July.

Therapeutic Exercise for the Treatment of the Neurologically Disabled (Brenner, H.J.) 3:103, May.

Topectomy, Studies in (Lewis, N.D. C., Landis, C. & King, H.E.) 1:26, Jan.

- V -

Vocational Counseling with the Physically Handicapped (Lofquist, L. H.) 4:134, July.

- W -

War Neurosis, a Follow-up Study (Brill, N.Q. & Beebe, G.W.) 1:28, Jan.

Wrestling Instructor's Guide 6:204, Nov.

Author Index--Volume XI

This Index includes all authors of articles appearing in this volume as well as authors of books reviewed and articles abstracted.

- A -

Aldes, J. 1:24, Jan. (Abs)

Allison, J.B. 1:24 (Abs)

Alyea, E.P. & Boone, A.W. 5:167, Sept. (Abs)

Anderson, C.L. & Langton, C.V. 5:170, Sept. (BR)

Anderson, J.T., Taylor, H.L., Buskirk, E.R., Brozek, J. & Rande, F.G. 5:167, Sept. (Abs)

Ansberry, M., West, R. & Carr, A. 5:169, Sept. (BR)

- B -

Baer, E.E. & Gross, E.A. 3:88, May.

Bakaleinik, M. 5:167, Sept. (Abs)

Balser, B.H. 5:169, Sept. (BR)

Bard, P. 5:169, Sept. (BR)

Basmajian, J.V. 5:167, Sept. (Abs)

Bauer, J. 3:103, May (BR)

Beatty, R.R., Rose, D.L. & Rodzyminski, S.R. 4:131, July (Abs)

Beebe, G.W. & Brill, N.Q. 1:28, Jan. (BR)

Bennett, R.L. & Knowlton, G.C. 2:63, March (Abs)

Bergleiter, R. & Jokl, E. 5:169, Sept. (BR)

Bishop, J.M., Donald, K.W., Taylor, S.H. & Wormald, P.N. 6:202, Nov. (Abs)

Boccolini, F. 1:26, Jan. (BR)

Boone, A.W. & Alyea, E.P. 5:167, Sept. (Abs)

Braceland, F.J. 5:167, Sept. (Abs)

Brams, W.A. 2:67, March (BR)

Brancato, J.N. 3:85, May

Brandt, H.A. 2:58, March

Brenner, H.J. 3:103, May (BR)

Brenon, H.C. 2:63, March (Abs)

Brill, N.Q. 1:5, Jan.

Brill, N.Q. & Beebe, G.W. 1:28, Jan. (BR)

Brozek, J. 2:66, March (BR)

Brozek, J., Buskirk, E.R., Taylor, H.L., Anderson, J.T. & Rande, F.G. 5:167, Sept. (Abs)

Burrows, H.J. 1:23, Jan. (Abs)

Buskirk, E.R., Brozek, J., Taylor, H.L., Anderson, J.T. & Rande, F.G. 5:167, Sept. (Abs)

- C -

Cannell, C.F. & Kahn, R.L. 5:170, Sept. (BR)

Carr, A., West, R. & Ansberry, M. 5:169, Sept. (BR)

Chance, M.R., Lucas, A.J. & Waterhouse, J.A.H. 1:24, Jan. (Abs)

Clarke, D.H. 2:48, March

Clemmesen, S.M. 3:101, May (Abs)

(2)

Cobb, S. 5:166, Sept. (Abs)

Colson, J.H.C. 1:26, Jan. (BR)

Comstock, R.L., & Fishbune, L.J. 6:201, Nov.

Crane, E.V. 5:170, Sept. (BR)

Critchley, M. 3:101, May (Abs)

Cruikshank, C.D., & Trotter, M.D. 2:63, March (Abs)

Cuadra, C.A., Williams, M. & Gross, Z. 4:113, July

Cureton, T.K. 5:145, Sept.

Cureton, T.K. 6:186, Nov.

- D -

Dawson, G.R. 4:131, July (Abs)

Day, F.G. 4:130, July (Abs)

Devins, G.V. 6:197, Nov.

Deyoe, F.S. 5:159, Sept.

Donald, K.W., Bishop, J.M., Taylor, S.H. & Wormald, P.N. 6:202, Nov. (Abs)

Dorris, R.J. & Shinkard, A.J. 5:166, Sept. (Abs)

Dunn, H.L. 4:134, July (BR)

Durnin, J.V.G.A. & Mikulicic, V. 2:62, March (Abs)

- E -

Edwards, D.A.W. 2:62, March (Abs)

Emmons, W.H. & Simon, C.W. 2:63, March (Abs)

Ewalt, J.R. 3:104, May (BR)

Ewen, H. 4:133, July (BR)

- F -

Fabing, H.D. 3:101, May (Abs)
 Fairfield, L. 4:133, July (BR)
 Farber, N. 2:56, March
 Farrell, G.L. & Francis C.C. 5:169, Sept. (BR)
 Fenn, W.O. 6:202, Nov. (Abs)
 Field, J.M. 4:120, July
 Firth, R. 4:133, July (BR)
 Fishbune, L.J., & Comstock, R.L. 6:201, Nov.
 Francis, C.C. & Farrell, G.L. 5:169, Sept. (BR)
 Frankel, C.J., Webster, D.K. & Hamilton, T.M. 4:131, July (Abs)
 Franz, W.L., Sands, G.W. & Hoyle, H.L. 3:101, May (Abs)
 Fraser, I. 1:26, Jan. (BR)
 Frazer, J.M. 1:28, Jan. (BR)

- G -

Gage, E.L. 3:100, May (Abs)
 Gardner, K.D. 2:63, March (Abs)
 Garn, S.M. 4:132, July (Abs) (2)
 Getz, S.B. & Lodge, E. 6:204, Nov. (BR)
 Giles, H. 3:105, May (BR)
 Graham, H. 6:204, Nov. (BR)
 Graham, M. 5:152, Sept.
 Gregg, A. 4:124, July
 Gross, E.A. & Baer, E.E. 3:88, May
 Gross, Z., Cuadra, C.A. & Williams, M. 4:133, July
 Grossjohann, A. 4:133, July (BR)
 Grumme, M. 3:104, May (BR)

- H -

Hamilton, T.M., Frankel, C.J. & Webster, D. K. 4:131, July (Abs)
 Hayes, L.A. 3:92, May
 Heaslet, R.B. 1:17, Jan.
 Hernlund, V. & Steinhaus, A.H. 3:96, May
 Heron, W. 5:170, Sept. (BR)
 Hill, A.B. 2:65, March (BR)
 Hill, L.F. & Larson, L.A. 4:134, July (BR)
 Hinkle, L.E. & Wolff, H.G. 4:131, July (Abs)
 Hirsch, J.G., Schaedler, R.W., Pierce, C.H. & Smith, I.M. 4:130, July (Abs)
 Hornof, Z. & Kremer, M. 3:101, May (Abs)
 Hoyle, H.L., Franz, W.L. & Sands, G.W. 3:101, May (Abs)
 Humphrey, J.H., Johnson, G.B. & Johnson, W.R. 4:135, July (BR)

- J -

Johnson, G.B., Johnson, W.R. & Humphrey, J.H. 4:135, July (BR)
 Johnson, W. R., Johnson, G.B. & Humphrey, J.H. 4:135, July (BR)
 Jokl, E. 2:65, March (BR)
 Jokl, E. & Bergleiter, R. 5:169, Sept. (BR)
 Joseph, J., & Williams, P.L. 6:202, Nov. (Abs)
 Jurcisin, G. 2:51, March

- K -

Kahn, R.L. & Cannell, C.F. 5:170, Sept. (BR)
 Karki, N.T. 5:166, Sept. (Abs)
 Karvonen, M.J. 2:65, March (BR)
 King, H.E., Lewis, N.D.C. & Landis, C. 1:26, Jan. (BR)
 King, S.H., & VonMering 6:204, Nov. (BR)
 Knowlton, G.C. & Bennett, R.L. 2:63, March (Abs)
 Krehl, W.A. 3:100, May (Abs)

Kremer, M. & Hornof, Z. 3:101, May (Abs)
 Kutner, B. 2:66, March (BR)

- L -

Lanford, C.S. & Sherman, H.C. 4:135, July (BR)
 Langton, C.V. & Anderson, C.L. 5:170, Sept. (BR)
 Larson, L.A. & Hill, L.F. 4:134, July (BR)
 Larsson, L. E. 1:26, Jan. (BR)
 Lawton, G. 2:65, March (BR)
 Lee, E.S. & Malzberg, B. 1:27, Jan. (BR)
 Lee, H.B. 6:203, Nov. (Abs)
 Lessing, W.W. 2:66, March (BR)
 Linden, M.E. 1:24, Jan. (Abs)
 Lodge, E., & Getz, S.B. 6:204, Nov. (BR)
 Lofquist, L.H. 4:134, July (BR)
 Lucas, A.J., Chance, M.R. & Waterhouse, J. A. H. 1:24, Jan. (Abs)
 Luongo, E.P. 2:63, March (Abs)

- M -

MacMillan, W.J. 2:67, March (BR)
 Manners, D. 2:67, March (BR)
 Mantoye, H.J. 2:66, March (BR)
 McCloy, C.H. 3:91, May
 McCloy, C.H. 6:181, Nov.
 Meerloo, J.A.M. 3:104, May (BR)
 Melrose, A.G. 5:167, Sept. (Abs)
 Menninger, K. 6:202, Nov. (Abs)
 Michael-Smith, H. 1:27, Jan. (BR)
 Mikulicic, V. & Durnin, J.V.G.A. 2:62, March (Abs)
 Montagu, A. 1:28, Jan. (BR)
 Moon, H.D. & St. Vincent, L. 4:131, July (Abs)
 Muller, E. A. 2:41, March

- N -

Naimark, G.M. 5:166, Sept. (Abs)
 Northrup, E. 5:168, Sept. (BR)
 Novich, N.M. 1:24, Jan. (Abs)

- P -

Pierce, C.H., Hirsch, J.G., Schaedler, R.W. & Smith, I.M. 4:130, July (Abs)
 Piersol, G. 1:24, Jan. (Abs)
 Poley, M.S. 3:01, May

- R -

Rachun, A. 4:130, July (Abs)
 Rande, F.G., Taylor, H.L., Buskirk, E.R., Brozek, J. & Anderson, J. T. 5:167, Sept. (Abs)
 Rathbone, J. 6:204, Nov. (BR)
 Reed, S.C. 4:133, July (BR)
 Reynolds, R.J.S. 4:135, July (BR)
 Rivlin, S. 4:131, July (Abs)
 Robbins, C.A. 1:24, Jan. (Abs)
 Robinson, C.H. & Proudfit, F.T. 3:104, May (BR)
 Rodzyminski, S.F., Rose, D.L. & Beatty, R.R. 4:131, July (Abs)
 Rose, D.L., Rodzyminski, S.F. & Beatty, R.R. 4:131, July (Abs)
 Rose, J.C. 5:166, Sept. (Abs)
 Rosen, E. 4:134, July (BR)
 Ryde, D. 2:63, March (Abs)

- S -

Sands, G.W., Franz, W.L. & Hoyle, H.L. 3:101, May (Abs)
 Schaedler, R.W., Hirsch, J.G., Pierce, C.H. & Smith, I.M. 4:130, July (Abs)
 Schaffer, F.J. & Wertz, S.H. 5:150, Sept.
 Selye, H. 3:103, May (BR)
 Shea, J.G., Fazekas, J.F. & Sullivan, P.D. 3:102, May (Abs)

Sherman, H.C. & Lanford, C.S. 4:135, July (BR)
 Shinkard, A.J. & Dorris, R.J. 5:166, Sept. (Abs)
 Simon, C.W. & Emmons, W.H. 2:63, March (Abs)
 Simonson, E. 4:130, July (Abs)
 Smith, I.M., Hirsch, J.G., Schaedler, R.W. & Pierce, C.H. 4:130, July (Abs)
 Spira, E. 4:130, July (Abs)
 St. Vincent, L. & Moon, H.D. 4:131, July (Abs)
 Stahl, W.C. 6:202, Nov. (Abs)
 Stamm, T.T. 5:170, Sept. (BR)
 Steinhaus, A.H. & Hernlund, V. 3:96, May
 Stenn, F. 6:203, Nov. (Abs)
 Strunk, F.R. 2:67, March (BR)
 Sullivan, P.D., Fazekas, J.F. & Shea, J.G. 3:102, May (Abs)
 Summerskill, E. 2:66, March (BR)
 Sutton, D.C., Sutton, G.C. & Swisher, W. P. 4:132, July (Abs)
 Sutton, G.C., Sutton, D.C. & Swisher, W.P. 4:132, July (Abs)
 Swisher, W.P., Sutton, G.C. & Sutton, D.C. 4:132, July (Abs)

- T -

Taylor, H.L., Buskirk, E.R., Brozek, J., Anderson, J.T. & Rande, F.G. 5:167, Sept.
 Taylor, S.H., Bishop, J.M., Donald, K.W., & Wormald, P.N. 6:202, Nov.
 Thompson, G.N. 1:28, Jan. (BR)
 Thorndike, A. 2:66, March (BR)
 Travis, L.E. 5:168, Sept. (Abs)
 Trotter, M.D. & Cruikshank, C.D. 2:63, March (Abs)
 Turner, C.E. 4:133, July (BR)
 Twombly, G.C. 3:100, May (Abs)

- V -

Van Liere, G.J. 6:202, Nov. (Abs)
 Van Schoick, J. 5:154, Sept.
 VonMering, O. & King, S.H. 6:204, Nov. (BR)

- W -

Waterhouse, J.A.H., Chance, M.R. & Lucas, A.J. 1:24, Jan. (Abs)
 Webster, D.K., Frankel, C.J. & Hamilton, T.M. 4:131, July (Abs)
 Welch, W.H. 1:28, Jan. (BR)
 Wertz, S.H. & Schaffer, F.J. 5:150, Sept.
 Wessel, J.A. 4:135, July (BR)
 West, R., Ansberry, M. & Carr, A. 5:169, Sept. (BR)
 White, P.D. 6:202, Nov. (Abs)
 Whitehorn, J.C. 3:104, May (BR)
 Williams, P.L., & Joseph, J. 6:202, Nov. (Abs)
 Williams, M., Cuadra, C.A. & Gross, Z. 4:113, July
 Williams, M. & Worthingham, C. 4:134, July (BR)
 Wolff, H.G. & Hinkle, L.E. 4:131, July (Abs)
 Wormald, P.N., Bishop, J.M., Taylor, S.H. & Donald, K.N. 6:202, Nov. (Abs)
 Worthingham, C. & Williams, M. 4:134, July (BR)

- Y -

Young, C.H. 1:11, Jan.

- Z -

Zankel, H. 4:132, July (Abs)

Handicapped Drivers!

DRIVE YOUR CAR

—SAFELY
—EASILY

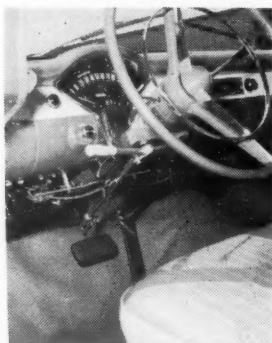
with new
improved
Mechanical
GAS & BRAKE

HAND

CONTROLS
\$39.50

Plus Postage
with copy
of this ad

**KITS CAN BE
INSTALLED
IN 2 HOURS**



Here's the greatest development in handicapped driver controls. One lever does both operations — works both brake and gas — makes your car absolutely fool-proof. The slightest touch of your fingers now operates your car. Other units selling at more than three times our price cannot give better performance. We guarantee this on a money-back basis. Thirty years' experience in building automatic clutch and brake controls is behind this guarantee. CALL OR WRITE FOR FREE PAMPHLET.

**Brake
Center, Inc.**

Chas. Libby, Pres.

**3716 QUEENS BLVD.
LONG ISLAND CITY
NEW YORK**

STillwell 4-6417

HOYER LIFTER FOR HOME AND HOSPITAL



FOR FURTHER INFORMATION WRITE
DEPT. AM-11, TED HOYER & CO., INC.
BOX 949, OSHKOSH, WISCONSIN

NATIONWIDE Guaranteed Hanger Clients Prosthetic Service



A HANGER Service Card, now being issued to every new HANGER client, lists on the back all authorized HANGER service facilities (see list below.) This new HANGER Service Card is tangible evidence of an old established HANGER policy. It introduces the client to any HANGER facility where he may secure whatever help he needs. It is his guarantee that any service required will be attended at any HANGER office. The real value of the HANGER Service Card to the amputee is in the extensive organization behind that card. Each office is staffed with one or more Certified Prosthetists, and offers complete facilities for adjustment, repair and consultation. This NATIONWIDE Service is an important HANGER plus value. Your patients will receive every possible consideration and attention.

.... *Hanger* PROSTHETICS

AVAILABLE AT AUTHORIZED FACILITIES IN THE FOLLOWING CITIES:

Atlanta 1, Ga.	Mobile, Ala.
Baltimore 1, Md.	Montgomery, Ala.
Birmingham 1, Ala.	Morgantown, W. Va.
Boston 16, Mass.	Nashville, Tenn.
Charleston 2, W. Va.	New Orleans 19, La.
Charlotte 2, N. C.	New York 11, N. Y.
Chattanooga, Tenn.	Oklahoma City 3, Okla.
Chicago 5, Ill.	Philadelphia 7, Pa.
Cincinnati 2, Ohio	Pittsburgh 30, Pa.
Columbia 5, S. C.	Raleigh, N. C.
Columbus 8, Ohio	Richmond 19, Va.
Dallas 1, Texas	Roanoke 12, Va.
Evansville, Indiana	St. Louis 3, Mo.
Indianapolis 2, Ind.	Shreveport, La.
Jacksonville, Fla.	Tampa 2, Fla.
Knoxville, Tenn.	Toledo, Ohio
Memphis, Tenn.	Washington 13, D. C.
Miami 37, Fla.	Wilkes-Barre, Pa.

VA TO EVALUATE NEW DRUGS

Newer drugs for treatment of mental illness will be evaluated by Veterans Administration in a continuing large-scale research program, VA has announced. Dr. Jesse F. Casey, VA director of psychiatry and neurology service, said the cooperative study of tranquilizing drugs, begun in April 1957, will serve as the basic project for a series of studies concerned with chemotherapy in psychiatry. A second or followup three-months study of more than half the 1,000 patients in the original project now is underway at 29 VA hospitals.

The research program at VA psychiatric hospitals will be similar to VA's chemotherapy of tuberculosis program for testing new TB drugs, results of which have been used by the entire medical profession since 1946 according to Dr. Casey. "We plan to test the newer drugs in psychiatry as they are developed for clinical use," Dr. Casey said. "These may include newer tranquilizers, psychic energizers, antihallucinatory drugs, and others."

The first VA cooperative study of tranquilizing drugs covered a period of three months and involved 40 hospitals. Although a wealth of data concerning reaction of patients to tranquilizers was gathered in the study, analysis of data will require several more months before information on results is available, Dr. Casey said.

Dr. Casey said the same drugs, chlorpromazine and promazine, are being tested in followup study so VA doctors can observe effects of treatment over a longer period of time. The 29 VA hospitals making the follow up study are located at Albany, N.Y.; American Lake, Wash.; Battle Creek, Mich.; Brockton, Mass.; Canandaigua, N.Y.; Danville, Ill.; Downey, Ill.; Durham, N.C.; Fort Meade, S.D.; Gulfport, Miss.; Jefferson Barracks, Mo.; Knoxville, Iowa; Lexington, Ky.; Los Angeles, Calif.; Lyons, N.J.; Montrose, N.Y.; Murfreesboro, Tenn.; Northampton, Mass.; North Little Rock, Ark.; Palo Alto, Calif.; Perry Point, Md.; Pittsburgh, Pa.; Roseburg, Ore.; Salisbury, N.C.; Sheridan, Wyo.; Togus, Maine; Topeka, Kans.; Tuskegee, Ala., and Waco, Tex.

BRAIN CHEMICALS LINKED TO MENTAL DISEASE

New evidence linking mental illness to disturbance in brain chemistry has been reported by Veterans Administration in its search for the causes of psychiatric sickness so counteracting measures may be taken. The evidence shows that an excess of one naturally occurring chemical in the brain can block or distort transmission of messages along the nerve circuits, while the excess of another can speed up nerve communication so as to flood the brain with impulses.

Dr. Amedeo S. Marrazzi, director of the VA research laboratories in neuropsychiatry at the VA hospital on Leech Farm Road in Pittsburgh, said the chemicals are serotonin and acetylcholine. Serotonin is a chemical relative of adrenaline, the powerful stimulant produced by the adrenal glands, and of hallucination-producing compounds such as mescaline, Dr. Marrazzi said. Normally it acts as a brake to slow messages traveling along the pathways of the nervous system so the brain does not become "jammed up" and the person confused, he said.

Research by Dr. Marrazzi and Dr. E. Ross Hart at the Pittsburgh laboratories showed that an excess of serotonin given by injection slows transmission too much and disrupts these messages.

The next step in their work was to show that an excess of natural serotonin in the brain has the same action as the injected serotonin.

Joined by Dr. Melvyn I. Gluckman, they devised a method to knock out the brain chemical MAO (monoamine oxidase), which acts constantly in the body to destroy serotonin. By injecting ipriniazid, they controlled MAO so that natural serotonin accumulated in excess amounts in the brain. Iproniazid, a chemical relative of a drug used against tuberculosis, "poisons" MAO so that serotonin is not destroyed. Dr. Marrazzi said injections of iproniazid produced the same abnormal patterns of brain waves as did injections of serotonin.

"Faulty use of adrenaline or chemically related substances by the body could produce abnormal substances or excesses, for example, of serotonin or a similar compound and inhibit the normal function of nerve transmission," Dr. Marrazzi said. "Other difficulties in the chemistry of the brain could produce an excess of the brain chemical acetylcholine which facilitates transmission of signals."

"Apparently mental health depends on proper functioning of mechanisms that maintain an appropriate balance of chemical messengers in the body," he said.

Dr. Marrazzi said the action of tranquilizing drugs also may be a key to biochemistry of mental illness. Work at the Pittsburgh laboratories shows the actions of mescaline and of serotonin in inhibiting transmission of nerve impulses can be blocked by tranquilizers such as reserpine. This finding indicates tranquilizers also may block the action of adrenaline and serotonin on pathways of the human nervous system, he explained.

Give To The Scholarship Fund

THE EASY WAY GYM BAR (for doorway)



The solution for rehabilitation.
The ideal stretching bar.

The newly patented, improved EASY WAY GYM BAR is your best buy — First in Quality — First in Advantages — First in Sales, as it outsells all the rest combined.

It is 2" longer, 25" to 38".

It works on a right and left hand threaded aluminum inner rod—rust proof.

Rubber ends will not mar wall.

Your hands and the outer tube are always centrally placed in doorway.

No nails, screws or tools required. Instantly installed.

Retails for \$6.95

For more information write
KLAUDT PRODUCTS, INC.
Woodstock, Illinois



PHYSICAL
THERAPY

For Treatment
of

**SPASTIC CASES • CEREBRAL
PALSY • STROKE • POLIO
HAND INJURIES
GENERAL ELECTRIC COMPANY'S
SILICONE**

BOUNCING PUTTY

Does Not Harden • Lasts Indefinitely
Can Be Autoclaved

As A "Trial Order"—Send \$2.00 For One
\$2.85 Jar

S. R. GITTENS, Sole Distributor
1620 Callowhill St., Philadelphia 30, Pa.

Classified Directory

Price of Directory Listing for one Year—6 issues—\$10.00

STORES WHERE EVEREST AND JENNINGS PRODUCTS MAY BE PURCHASED

BOWERS AMBULANCE SERVICE, 430 E. Pacific Coast Highway, Long Beach, California.
 PEACOCK SURGICAL CO., INC., 1235 Texas Ave., Shreveport, Louisiana Day 3-5276—Night 7-4910
 BETH-MONT SURGICAL SUPPLY CO., 6811 Wisconsin Ave., Chevy Chase, Md. OLiver 4-6200
 THE COLSON-MERRIAM CO., 1623 N. Aisquith St., Baltimore, Maryland Mulberry 2847
 SEILER SURGICAL CO., INC., 111 S. 17th St., Omaha 2, Nebraska ATLantic 5825
 AMSTERDAM BROTHERS, 1060 Broad St., Newark 2, New Jersey
 COSMEVO SURGICAL SUPPLY CO., 236 River St., Hackensack, New Jersey DIamond 3-5555
 FIDELITY MEDICAL SUPPLY CO., 1st & St. Clair Sts., Dayton 2, Ohio MI 7636
 E. A. WARNIK CO., Simon Long Building, 50-52 S. Main St., Wilkes-Barre, Pennsylvania 2-8084
 MARVIN F. POLARD CO., 1412 E. Broad St., Richmond, Virginia

STORES WHERE EVEREST AND JENNINGS PRODUCTS MAY BE RENTED OR PURCHASED

ABBEY RENTS, 600 S. Normandie Ave., Los Angeles 5, Calif. DU—4-5292; PL—2-3131
 AN—1-6134; HO—2-0924; HE—2-2973; TO—6-1714; OX—4-2603; OR—7-6178; CI—3-2101
 PO—39105; DI—4-7137; OL—2-2760; SY—5-7041; EX—4-3232; KI—5-1181
 ABBEY RENTS, 2896 El Cajon Blvd., San Diego 4, Calif. ATwater—1-8151
 ABBEY RENTS, 1314 Post Street, San Francisco 9, Calif. GRaystone—4-2525
 ABBEY RENTS, 2841 S. El Camino Real, San Mateo, Calif. FIreside—5-5775
 ABBEY RENTS, 2315 Broadway, Oakland 12, Calif. HIgate—4-8181
 ABBEY RENTS, 1827 "J" Street, Sacramento 14, Calif. GIlibert—8-9151
 ABBEY RENTS, 1000 E. Burnside, Portland 14, Ore. BElmont—4-5001
 ABBEY RENTS, 1000 Pike Street, Seattle 1, Wash. SEneca—5040
 ABBEY RENTS, 350 Broadway, Denver 9, Colo. PEarl—3-4651
 ABBEY RENTS, 4041 Broadway, Kansas City 11, Mo. JEfferson—1-5200
 ABBEY RENTS, 3230 Washington Blvd., St. Louis 3, Mo. OL—2-5700; MI—7-3300
 ABBEY RENTS, 2220 Lyndale Ave. S., Minneapolis 5, Minn. FE—8-8931; MI—6-6546
 ABBEY RENTS, 2824 W. Fond du Lac Ave., Milwaukee 10, Wis. UPtown—3-2000
 ABBEY RENTS, 3545 Reading Road, Cincinnati 29, Ohio AVon—1-7000
 BEST RENTALS, 2025 S. Shepherd Drive, Houston 19, Texas JAckson—3-4416
 MEDICAL ARTS SUPPLY, 233 Washington S.E. and Pharmacy 20-23 Sheldon S.E., Grand Rapids 2, Mich. 9-8274
 DOWD CHAIR RENTAL & SALES, 138 South Highland Ave., Pittsburgh, Pa. MOntrose 1-5355
 DOWD CHAIR RENTAL & SALES, 4848 Woodward Ave., Detroit 1, Mich. TEmple 3-3490
 DOWD CHAIR RENTAL & SALES, 310 N.E. 61st St., Miami 37, Fla. 89-8561
 DOWD CHAIR RENTAL & SALES, 392 Franklin St., Buffalo, New York CleveLand 3335
 DOWD CHAIR RENTAL & SALES, (Canada) LTD., 196 George St., Toronto 2, Ontario, Canada WALnut 4-6644
 ELMIRA DRUG & CHEMICAL CO., 368 No. Main St., Elmira, New York 6289
 SAM FORTAS HOUSE FURNISHING CO., INC., Main and Poplar, Memphis, Tenn. JAckson 5-3515
 HEYL PHYSICIANS SUPPLY CO., 419 State St., Erie, Pennsylvania 2-6785
 BURLINGTON SURGICAL APPLIANCES, 314 High St., Burlington, New Jersey BUrlington 3-0052

MANUFACTURERS OF ORTHOPEDIC AND PROSTHETIC APPLIANCES

BIRMINGHAM ARTIFICIAL LIMB CO., 410 N. 19th St., Birmingham 3, Alabama 3-1786
 FIDELITY ORTHOPEDIC, 5th and Main Sts., Dayton 2, Ohio
 GEORGE S. ANDERSEN CO., 3419 Walnut St., Philadelphia 4, Pennsylvania
 YALE SURGICAL CO., 1004 Grand Ave., New Haven 11, Connecticut State 7-3005

UNCLASSIFIED

NATIONAL SPORTS CO., Mfgs. of Therapy Gym Mats, 360 Marquette St., Fond du Lac, Wisc. WA 1-8200

IF NOT DELIVERED IN 5 DAYS
RETURN TO
EDWARD F. MECHELLA
BOX 478, MONTROSE, N. Y.

State Universities of Iowa
Libraries
Serials Acquisitions
Iowa City, Iowa

SEC. 34.66 P. L. & R.
U. S. POSTAGE
PAID
MT. KISCO, N. Y.
PERMIT No. 222

La Berne

"Multi" Exerciser

The LaBerne "Multi" Exerciser offers Flexor Elbow Exercises, Adduction, Abduction and Extensor Shoulder Exercises, Shoulder Suppression, Shoulder Rotation, Abductor and Bilateral Hip Exercises, Knee and Hip Flexor Exercises, Abdominal and Intercostal Exercises, Hamstring Stretching and Stump Exercises.

This unit is easily moved from room to room and requires only 24" floor space. It has telescopic Height Adjustment, Hinged Joint Upright for use with Flutter Motion, Swivel Joints on Boot and Arm Attachment.

The "Multi" Exerciser is calibrated in pounds—offering resistive exercises that may be increased as the patient progresses. This unit can be used with specific pounds resistive in either direction, or set pounds resistance in both directions, or with assistance one direction, and resistive other direction.

Shown is model no. 9910 (it includes attachments shown)



PAT. PENDING



LaBerne Exercise Mat

The LaBerne Exercise mats were designed after much study and research with a number of Physical Medicine Departments. These mats are made by a special process, using polyurethane foam. Cover is tearproof, waterproof nylon. Weight of mats—8 oz. per square foot. Made in 48" width, any length. Stock size is 48" x 84" Model no. 9100

Any width or length available on special order.

WRITE FOR LITERATURE



La Berne Manufacturing Company, P. O. Box 5245,
Columbia, S. C. Phone SUset 7-6162

ORIGINATORS OF THE "WALK-OFF" PHYSICAL THERAPY TABLE

